EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-01

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Support for Fish Contamination

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	3.2, 3.4, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.14

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		0
This Action:		5,320
Total:		5,320

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Leanne Stahl (Signature) (Date)	Branch/Mail Code:	
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Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code:	
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Performance Work Statement
Contract # EP-C-14-016
Work Assignment # 4-01

I. TITLE: Support for Fish Contamination Studies

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III. LEVEL OF EFFORT: 5320 hours

IV. PERFORMANCE PERIOD: July 1, 2018 through June 30, 2019

V. BACKGROUND:

The U.S. Environmental Protection Agency's (EPA's) Office of Science and Technology (OST) within the Office of Water (OW) has conducted or is conducting a series of seven fish contamination studies. The first was a national probabilistic survey of chemical residues in freshwater fish tissue called the National Study of Chemical Residues in Lake Fish Tissue (or National Lake Fish Tissue Study). This study was designed to estimate the national distribution of the mean levels of selected persistent, bioaccumulative, and toxic (PBT) chemical residues in fish tissue from lakes and reservoirs of the conterminous United States. It generated data on the largest set of PBT chemicals studied in fish to date (314 analytes, including the full complement of polychlorinated biphenyl or PCB congeners and 46 polybrominated diphenyl ether or PBDE congeners). Results from this statistically based study allowed EPA to estimate the percentage of lakes and reservoirs across the country with fish tissue concentrations above levels of concern for human health. These results also provided the first national estimates of median concentrations and distributions for 314 chemicals in fish and defined a national freshwater fish contamination baseline for tracking pollution control progress. EPA completed external peer review of the draft final National Lake Fish Tissue Study report during 2007 and published results from the National Lake Fish Tissue Study in the technical journal *Environmental Monitoring and Assessment* in March 2009. During fall 2009, EPA completed production of the

final report and released the report to the public. The polybrominated diphenyl ether (PBDE) results from this study were published in *Environmental Monitoring and Assessment* in 2013, which completed the technical work for the study. EPA is continuing to respond to requests for National Lake Fish Tissue Study data.

The National Pilot Study of Pharmaceuticals and Personal Care Products (PPCPs) in Fish Tissue was the second fish contamination study undertaken by OST. OST initiated this pilot study in 2006 to investigate the occurrence of PPCP chemicals in fish tissue. The targeted design for the study involved collecting fish samples from five effluent-dominated streams in the vicinity of wastewater treatment plant (WWTP) discharges (and one reference site) and analyzing fillets and livers for 24 pharmaceutical compounds using a high performance liquid chromatography-tandem mass spectrometry (HPLC-MS/MS) method and fillets only for 12 personal care products using a gas chromatography-tandem mass spectrometry (GC-MS/MS) method. Initial fish collection was completed at all sites by November 2006 (Chicago, IL; Dallas, TX; Orlando, FL; Phoenix, AZ; West Chester, PA; and Gila R., NM [reference site]). A second fish collection effort was completed on March 28, 2007 for the Chicago site only. All the tissue samples have been analyzed and the data have been reviewed for fish collected during this study. EPA developed the final report for this study during a previous work assignment, but plans to release the report during the current contract period.

In 2008, OST began a third fish contamination study by participating in EPA's 2008-09 National Rivers and Streams Assessment (NRSA). The Office of Wetlands, Oceans, and Watersheds (OWOW) within OW had the overall responsibility for conducting this survey. This national statistically based survey involved selection of approximately 1800 sampling sites in the lower 48 states that consisted of about 900 boatable river reaches and about 900 wadeable stream reaches. The study design included a statistical subset of about 180 urban rivers based on the site classification of urban developed for the design and the designation of rivers as 5th order streams or above. Several types of samples were collected at each site by federal, state, or contractor teams during 2008 and 2009 to assess water chemistry, physical habitat, biological community integrity, pathogen contamination in water, and chemical contamination in fish tissue. OST focused its efforts initially on supporting collection of fish and ambient water samples at the urban river sampling locations, on developing protocols for fish tissue preparation, and on providing technical oversight of fish preparation activities being conducted for the 2008-09 NRSA. Ultimately, OWOW-sponsored field crews collected whole fish samples for fillet tissue analysis at 542 river sites (164 urban river sites and 378 nonurban river sites) in the two field sampling seasons. During 2010, OST completed fish preparation quality assurance (QA), analysis of urban river water and fish tissue samples for perfluorinated compounds (PFCs), and review (verification and validation) of analytical results for PFCs. In 2011, OST initiated QA reviews of data for other contaminants of concern from the 2008-09 NRSA urban river samples (e.g., musks) and for legacy contaminants from the 542 urban and nonurban river samples (e.g., mercury and selenium) and prepared files in 2012 for statistical analysis of three sets of the analytical data (mercury, selenium, and PFCs). OST completed QA reviews of NRSA analytical data for the organic compounds (PCBs, PBDEs, and pesticides) and prepared files for statistical analysis of these data in 2013. PFC and mercury results for the 2008-09 NRSA fish tissue indicator were published in 2014 and 2015, respectively. The 2008-09 NRSA fish tissue

indicator results for the organic chemicals (PCBs, PBDEs, and pesticides) were published in 2017.

The fourth study, a statistically based survey of fish contamination relevant to human health in the Great Lakes, was conducted under EPA's 2010 National Coastal Condition Assessment (NCCA). OST, the Great Lakes National Program Office (GLNPO), and the Office of Research and Development (ORD) collaborated to conduct this study, referred to as the 2010 Great Lakes Human Health Fish Tissue Study (2010 GLHHFTS). In 2010, the NCCA in the Great Lakes involved sampling 225 nearshore sites at depths of up to 30 m or at distances up to 5 km from shore in the five Great Lakes (45 sites per lake) for a number of indicators, including fish tissue for ecological applications. To generate data for the human health study, additional fish composite samples were collected at a subset of 157 sites (about 30 sites per lake). Planning for the GLHHFTS began in August 2009. OST completed training and sample collection for the GLHHFTS in 2010 and fish tissue preparation (i.e., filleting and homogenizing the fillet tissue from the fish samples) in 2011. In 2012, EPA completed analysis of the fillet samples for PBDEs, PFCs, and fatty acids and the data quality reviews for these analytical results. EPA completed tissue analysis and data quality reviews for mercury and PCBs in 2013, along with statistical analysis of the full suite of GLHHFTS fish tissue contaminant data (mercury, PCBs, PBDEs, and PFCs). PFC results were published in 2014 and fatty acid data were published in 2017. EPA is focusing on reporting the remaining GLHHFTS data (mercury, PCBs, and PBDEs) by 2019.

OST's fifth fish contamination study consists of a statistically based re-assessment of fish fillet contamination in U.S. rivers. This study provides the opportunity to develop trends data for contaminant levels in river fish. In the spring of 2012, OST began a series of activities for planning participation in EPA's 2013-14 National Rivers and Streams Assessment (2013-14 NRSA). As for the 2008-09 NRSA, OWOW has the lead responsibility for conducting this survey. The full scope for most of the 2013-14 NRSA indicators involves sample collection at about 1800 probability-based river and stream reaches throughout the lower 48 states. Initially, OST coordinated with OWOW to obtain whole fish samples from statistically representative subsets of 409 5th order or greater (i.e., river) sites sampled previously during the 2008-09 NRSA and 42 new major river sites. The actual field sampling effort during 2013 and 2014 yielded 353 human health fish samples. OST analyzed fillet tissue from 353 samples for mercury, from 349 samples for PFCs, and from a statistically representative subset of 223 samples for PCBs. Fillet sample preparation, fillet tissue analysis, and data quality review of the analytical results were completed in 2015. During 2016, EPA completed statistical analysis of the tissue data. Development of a technical journal article reporting the results for mercury, PCBs, and PFCs is currently underway.

In 2014, EPA began planning for participation in the NCCA 2015 to conduct the Great Lakes Human Health Fish Fillet Tissue Study (2015 GLHHFFTS) under the Great Lakes portion of the NCCA. The 2015 GLHHFFTS is OST's sixth fish contamination study, and it consists of a statistically based re-assessment of fish fillet contamination in the Great Lakes. This study provides the opportunity for developing trends data for contaminant levels in Great Lakes fish. In 2015, OST completed logistics planning, training, and fish sample collection (except for fish

samples from a few sites in Lake Michigan) for the 2015 GLHHFFTS. During 2016, OST provided support for the following activities: completing the Great Lakes fish sample collection effort in Lake Michigan; preparing fillet tissue samples from the whole fish samples collected for the 2015 GLHHFFTS; and analyzing the fillet samples for mercury, PCBs, and PFCs. EPA completed fillet tissue analyses for dioxins/furans and fatty acids in 2017, and initiated a broad screening analysis of fillet tissue samples for contaminants of emerging concern (CECs) in 2018. Data reporting will continue through 2019.

In early 2018, OST began planning for participation in the 2018-19 NRSA to conduct a third national study of contamination in river fish. This is the seventh in the series of fish contamination studies undertaken to date by OST. Initial activities have included working with ORD statisticians (in Corvallis, OR) to select fish contamination study sampling locations (477 river sites referred to as whole fish tissue sampling sites), participating in the development of field sampling documents with OWOW, assembling whole fish sampling kits, and providing fish tissue sampling training at the 12 NRSA 2018 training workshops. Some states may begin sample collection for the NRSA as early as May 2018, but the majority of samples will be collected from June through September 2018 for the first of the two field seasons. During this work assignment period of performance (July 1, 2018 through June 30, 2019), EPA anticipates completing one season of fish sample collection, preparing fillet tissue samples from the whole fish samples collected during the 2018 field season, mobilizing for the 2019 field season, completing fish tissue sampling training at a series of 12 NRSA 2019 training workshops, and initiating fish sample collection for the 2019 field season.

In addition to conducting the series of fish contamination studies, OST initiated a new study called the Fish Plug Evaluation Study in the early summer of 2017. This study has two objectives:

- to test whether fish fillet plug sampling and analysis can serve as a reliable surrogate for the traditional approach of homogenizing and analyzing whole fillet tissue to monitor mercury concentrations in fish (mercury phase)

- to investigate if it is technically feasible to collect fillet plug samples and analyze them for monitoring selenium levels in fish to comply with EPA's tissue-based water quality criterion for selenium (selenium phase)

To meet these objectives, the study design includes two phases: the mercury phase to address the first study objective and the selenium phase to address the second study objective, as indicated above. In the first year of the study, fish sample collection and most of the fillet tissue sample preparation and analysis were completed for the mercury phase of the study. This work assignment period of performance will correspond to the second year of the study. EPA anticipates completing the following activities in the second year of the study: mercury phase fillet tissue sample preparation and analysis; selenium phase fish sample collection, fillet tissue sample preparation, and fillet sample analysis; statistical analyses of mercury and selenium fillet data; and reporting the study results with initial emphasis on the mercury phase results.

VI. SCOPE OF WORK:

All activities described in the performance work statement (PWS) for this work assignment (WA) fall under the following numbered categories in the PWS for Contract Number EP-C-14-016:

3.2	Economic and Statistical Analyses
3.4	Technical Guidance, Report Development, and General Program Analysis
3.7	Environmental Assessments
3.8	Field Sampling
3.9	Laboratory Analysis
3.10	Workshops, Conferences, Training, and Logistical Support
3.11	Expert/Peer Review Support
3.12	Public Outreach and Technology Transfer
3.14	Preparation of Presentation Materials
4.2	Quality Assurance Project Plans
4.4	Quality Assurance Reporting

The purpose of this work assignment is:

- to provide support for implementing ongoing EPA fish contamination studies (e.g., the NCCA 2015 Great Lakes Human Health Fish Fillet Tissue Study and the 2018-19 NRSA Fish Fillet Tissue Study), for implementing the ongoing Fish Plug Evaluation Study, and for planning a new NCCA 2020 Great Lakes Human Health Fish Fillet Tissue Study, *and*

- to provide general technical support for activities related to fish contamination assessment and to evaluation of the health risks associated with human consumption of fish.

Contractor support required for these projects is described under nine (9) task areas, including Work Plan Development (Task 1); Support for QA/QC Development and Implementation (Task 2); Support for Training, Meetings, Conferences, and Workshops (Task 3); Support for Planning, Organizing, Implementing, and Reporting Field Sampling Activities (Task 4); Support for Laboratory Preparation of Fish Tissue Samples (Task 5); Support for Compiling, Integrating,

Analyzing, Displaying, and Distributing Fish Study Data (Task 6); Support for Development of Public Outreach Materials (Task 7); Support for Development of Final Study Reports (Task 8); and General Technical Support (Task 9). Specific activities to be performed under each task are described below.

Task 1: Work Plan Development

The Contractor shall develop a work plan to address the tasks identified in this work assignment, including a detailed budget and schedule. The Contractor shall also submit monthly invoices and progress reports in accordance with contract requirements.

Task 2: Support for QA/QC Development and Implementation

The Contractor shall provide support for the following Quality Assurance/Quality Control (QA/QC) activities:

1. Development and review of Quality Assurance Project Plans (QAPPs)
2. Review of field sampling and fish sample preparation data
3. Verification of the field sampling and analytical data in fish study databases for statistical input files and review of statistical data in statistical output files
4. Other QA/QC activities specified by the EPA WACOR as related to the performance objectives of the work assignment

Under ***Activity 1***, the Contractor shall be responsible for supporting the development, review, and distribution of Quality Assurance Project Plans (QAPPs). During this WA performance period, EPA anticipates requiring support for the following QAPP activities:

- **Completion of an existing draft Fish Plug Evaluation Study Sample Collection and Preparation QAPP Revision 2, as applicable.** Revision 2 of this QAPP adds requirements and procedures for fillet sample preparation (from the 30 individual whole fish samples) for the selenium phase of the Fish Plug Evaluation Study. In completing this QAPP revision, the Contractor shall adhere to the current EPA requirements for preparing a project-specific QAPP. The Contractor shall be responsible for preparing the final QAPP Revision 2 that provides the required project and technical information for fillet tissue sample preparation for selenium analysis, including the following:
  - A draft final QAPP Revision 2 based on review comments from QAPP approvers, *and*
  - A final signed QAPP Revision 2 for distribution to individuals on the QAPP distribution list.

- **Development of a new QAPP for 2018-19 NRSA human health fish tissue sample preparation.** In developing this new QAPP, the Contractor shall adhere to the

current EPA requirements for preparing a project-specific QAPP. The Contractor shall be responsible for preparing a series of draft QAPPs and the final QAPP that provide the required project and technical information for 2018-19 NRSA fish tissue sample preparation. At a minimum, this series shall include:

- A first draft QAPP for EPA WACOR review,
- A second draft QAPP based on EPA WACOR comments for QAPP approver review,
- A draft final QAPP based on review comments from QAPP approvers, *and*
- A final signed QAPP for distribution to individuals on the QAPP distribution list.

- **Review of the Fish Plug Evaluation Study analytical QAPP Revision 1 for analysis of plug and fillet tissue samples for selenium.** The Contractor shall review a draft copy of Revision 1 of this analytical QAPP and provide comments to the EPA WACOR based on this review. During review of the content and format of this analytical QAPP, the Contractor shall apply the latest EPA guidance for preparing QAPPs to develop QAPP comments.

- **Review of the new QAPP for analysis of 2018-19 NRSA fillet tissue samples for target chemicals, as applicable.** The Contractor shall review a draft copy of the initial analytical QAPP and of any subsequent QAPP revisions and provide comments to the EPA WACOR based on these reviews. During review of the content and format of this analytical QAPP, the Contractor shall apply the latest EPA guidance for preparing QAPPs to develop comments.

Under *Activity 2*, the Contractor shall assure the quality of fish sample collection records and fish tissue sample preparation records for completeness and accuracy by completing QC reviews for the following records, using QA/QC procedures applied for this activity under WA 3-01:

- Fish Plug Evaluation Study selenium phase fish sample collection records
- Fish Plug Evaluation Study fish tissue sample preparation weekly reports
- 2018-19 NRSA whole fish sample collection records
- 2018-19 NRSA fish tissue sample preparation weekly reports

The Contractor shall complete QA/QC documentation for the selenium phase of the Fish Plug Evaluation Study field data related to whole fish and plug sample collection. The Contractor shall use field data quality review forms developed under WA 3-01 for the mercury phase of the Fish Plug Evaluation Study to document field data quality for the selenium phase of the study after making any necessary modifications to the forms. In addition to summarizing results of the field data quality reviews, these forms shall include a record of the reconciliation of any discrepancies in the field records with the appropriate field personnel. The Contractor shall also identify any outstanding issues concerning documentation of Fish Plug Evaluation Study field data related to whole fish sample collection and extraction of fillet plug samples in the field,

obtain information to resolve these issues from sources such as field personnel, and provide this information to the EPA WACOR for issue resolution.

The Contractor shall complete QC review of Fish Plug Evaluation Study fish tissue sample preparation weekly reports, identify any discrepancies in the fish tissue sample preparation records, and report these discrepancies to the EPA WACOR. The Contractor shall also be responsible for resolving the discrepancies in the fish tissue sample preparation weekly reports and reporting resolution of these discrepancies to the EPA WACOR. In conducting reviews of the fish tissue sample preparation weekly reports, the Contractor shall follow the same procedures used to review these weekly reports under WA 3-01. The Contractor shall ensure that staff who are independent of the fish tissue sample preparation operations conduct reviews of the fish tissue sample preparation weekly reports.

The Contractor shall complete QA/QC documentation for the 2018-19 NRSA field data related to whole fish sample collection for fillet tissue analysis. The content and format of the 2018-19 NRSA data quality review forms shall remain consistent with the corresponding forms for previous fish tissue studies (e.g., the 2013-14 NRSA). In addition to summarizing results of the field data reviews, these forms shall include a record of the reconciliation of any discrepancies in the field records with the appropriate field personnel. The Contractor shall also identify any outstanding issues concerning documentation of 2018-19 NRSA field data related to whole fish sample collection, obtain information to resolve these issues from sources such as field personnel, and provide this information to the EPA WACOR for issue resolution.

The Contractor shall complete QC review of 2018-19 NRSA fish tissue sample preparation weekly reports, identify any discrepancies in the fish tissue sample preparation records, and report these discrepancies to the EPA WACOR. The Contractor shall also be responsible for resolving the discrepancies in the fish tissue sample preparation weekly reports and reporting resolution of these discrepancies to the EPA WACOR. In conducting reviews of the fish tissue sample preparation weekly reports, the Contractor shall follow the same procedures used to review these weekly reports under previous work assignments providing this support for EPA fish contamination studies. The Contractor shall ensure that staff who are independent of the fish tissue sample preparation operations conduct reviews of the fish tissue sample preparation weekly reports.

Under ***Activity 3***, the Contractor shall perform the following activities:

- Verify accurate entry of field sampling data (i.e., data related to human health fish sample collection) into OST fish study databases or other related EPA databases (e.g., National Aquatic Resource Survey Information Management or NARS IM databases developed and maintained by the EPA's Office of Research and Development facility in Corvallis, OR) as requested by the EPA WACOR via written technical direction. The Contractor is not responsible for database development. The databases are being developed under other EPA contracts that provide support for OST fish study database development or for compilation of NARS data (including the human health fish tissue data) in a centralized tracking system.

- Complete QC reviews of the fish study data files prepared as input files for statistical analysis of fish tissue concentration data, or as public release data files, to ensure that information for valid fish samples is complete and accurate and that no invalid fish sample results are included in these files. The Contractor shall document results of these QC reviews and submit this documentation to the EPA WACOR. During this WA performance period, this activity shall apply primarily to Fish Plug Evaluation Study mercury and selenium data files.

- Conduct QC reviews of fish study statistical output files for completeness and accuracy. The Contractor shall report results of these reviews to the EPA WACOR. Review of statistical analysis output data files shall focus on the Fish Plug Evaluation Study during this WA performance period, but may also include the 2015 GLHHFFTS dioxin and furan statistical analysis output data files.

Under ***Activity 4***, the Contractor shall be responsible for providing support for other QA/QC activities specified by the EPA WACOR through written technical direction. This may include activities such as providing support for developing or reviewing QA/QC reports on work performed for any of the OST fish contamination studies and preparing documentation for Agency QA audits. During this WA performance period, EPA anticipates requiring Contractor support for review of analytical QA reports for the 2010 Great Lakes Human Health Fish Tissue Study, the 2013-14 NRSA Fish Fillet Tissue Study, and the 2015 GLHHFFTS and for development of a comment summary based on each review. EPA also anticipates requiring Contractor support to prepare fish study documentation for its annual OW QA report.

Task 3: Support for Training, Meetings, Conferences, and Workshops

The Contractor shall provide support for the following activities related to training, meetings, conferences, and workshops:

1. Development of presentations, briefings, training materials, and other program materials related to EPA fish studies for a variety of audiences
2. Logistical support for planning and participating in training, meetings, conferences, and workshops
3. Attendance at training events, meetings, conferences, and workshops to serve in a range of roles
4. Follow-up activities for training, meetings, conferences, and workshops

The Contractor shall provide support for a variety of meetings, conferences, and training workshops related to EPA's fish contamination studies. EPA anticipates Contractor attendance at quarterly national fish study team coordination meetings held at EPA Headquarters (HQ) and at national or regional meetings and conferences to present fish study information (e.g., the 2018 American Fisheries Society (AFS) meeting, the 2018 SETAC meeting, the EPA co-sponsored 2019 National Water Quality Monitoring Conference, and the 2019 EPA National Fish Forum).

During the WA performance period, EPA will require support for training material development and for instruction of field sampling teams on the protocols for collection, handling, and shipping of 2018-19 NRSA human health fish samples at a series of up to 12 training workshops during March through June 2019. In addition, EPA will require routine support for development of presentation and briefing materials for a variety of audiences. Specific information for each activity is described below.

Under ***Activity 1***, the Contractor shall be responsible for developing presentations, briefings, training materials, and other program materials related to EPA fish contamination studies for a variety of audiences. These materials may consist of slides, project summaries, handouts, and other information about or related to the fish studies. The content of these materials may relate to any aspect of the fish studies, including study design, implementation of the study, data analysis, study results, and storage and retrieval of fish tissue study data. As directed by the EPA WACOR via written technical direction, the Contractor shall develop fish study materials appropriate for a variety of audiences, including EPA management, EPA Regions, other EPA program offices and Federal agencies, States, Tribes, and environmental, professional, or industry organizations. At a minimum, EPA anticipates the need to develop fish study materials during this WA performance period for the following types of events:

- EPA quarterly meetings: The Contractor shall provide support for developing a variety of meeting materials, such as meeting agendas, project status summaries, and meeting notes.

- EPA management briefings: EPA anticipates scheduling four management briefings on fish contamination studies during the WA performance period. The Contractor shall produce slides for fish contamination briefings in PowerPoint and electronic deliverables developed in WORD and PDF formats for these briefings.

- Presentations for other EPA programs, Federal agencies, and environmental, professional, or industry organizations: EPA anticipates a requirement to deliver eight presentations during the WA performance period. EPA estimates that four of these presentations shall be posters and the others shall be PowerPoint presentations.

- Fish sampling training materials for the NRSA 2019 training workshops: The Contractor shall provide support for preparing NRSA 2019 fish tissue sampling training materials. The Contractor shall update existing fish sampling training materials developed for the NRSA 2018 training workshops to prepare the NRSA 2019 fish sampling training materials. These materials include fish tissue study training slides and supporting materials, such as frequently asked questions (FAQs), related to fish tissue sample collection. EPA anticipates the need for an average of 30 sets of training material handouts for up to 12 training workshops during the WA period of performance.

For ***Activity 2***, the Contractor shall provide logistical support for planning and participating in training, meetings, workshops, and scientific conferences as specified by the EPA WACOR through written technical direction. EPA anticipates that this activity shall apply to the following events during the WA period of performance:

- quarterly meetings at EPA Headquarters in Washington, DC;
- the series of 12 NRSA 2019 training workshops; and
- national or regional conferences and meetings, including:
  - the 2018 AFS meeting in Atlantic City, NJ during August 2018;
  - the 2018 SETAC meeting in Sacramento, CA during November 2018;
  - the 2019 National Water Quality Monitoring Conference during May 2019 (location to be determined (TBD), but for the purpose of estimating costs, assume a 4-day meeting in Denver, CO);
  - the 2019 EPA National Fish Forum (location and time TBD, but for cost estimating purposes, assume a 4-day meeting in Portland, OR); and
  - a regional Great Lakes meeting (location and time TBD, but for cost estimating purposes, assume a 3-day meeting in Chicago, IL).

This support shall consist of a broad range of activities, such as the following:

- Developing agendas for meetings, workshops, and training events.
- Planning and developing new materials related to the fish studies and/or customizing existing materials for use during training events, meetings, conferences, and workshops.
- Contacting training, meeting, and workshop participants to obtain information necessary for planning and participating in these events.
- Compiling and organizing fish study information for distribution at training events, meetings, conferences, and workshops.
- Shipping or transporting fish study-related materials to training events, meetings, conferences, and workshops (e.g., posters, handouts, fact sheets, supplies for training demonstrations, etc.). If applicable, materials for quarterly fish study team meetings shall be shipped to EPA HQ in Washington, DC. For estimating costs of shipping materials and supplies to the NRSA 2019 training workshops, assume shipments to the 12 locations identified under **Task 3, *Activity 3***; for estimating costs of shipping materials for scientific conferences and meetings, assume shipments to the five locations identified for ***Activity 2*** above.

Under ***Activity 3,*** the Contractor shall provide staff with appropriate skills and experience to attend meetings, workshops, and scientific conferences relevant to EPA's fish studies and serve in a range of roles at these events as specified by the EPA WACOR via written technical direction. These roles may include trainers, presenters, facilitators, and note-takers.

At the written technical direction of the EPA WACOR, the Contractor shall attend national or regional meetings and scientific conferences related to fish contamination assessment and fish study team meetings at EPA Headquarters. The Contractor shall also participate in conference calls involving fish study team members and/or study participants and EPA staff for discussion and resolution of program and technical issues. EPA anticipates Contractor attendance at quarterly fish study team meetings at EPA HQ and the five scientific conferences and meetings listed under **Task 3,** ***Activity 2*** to serve as presenters during the WA performance period. In estimating costs for participation in the scientific conferences and meetings, the Contractor shall assume the attendance of a Senior Fisheries Biologist with long-term experience supporting EPA fish tissue studies for the full duration of the AFS, SETAC, and regional meetings. For the 2019 National Water Quality Monitoring Conference and the 2019 EPA National Fish Forum, the Contractor shall assume attendance of up to two staff, including a Senior Fisheries Biologist with long-term experience providing EPA fish tissue study support and an additional fish study support team member for the duration of these EPA-sponsored conferences.

The Contractor shall provide qualified personnel to serve as fish tissue indicator trainers for the series of NRSA 2019 training workshops being organized and conducted by EPA's Office of Wetlands, Oceans, and Watersheds. These personnel shall consist of a Senior Fisheries Biologist with experience as a NRSA 2018 fish tissue indicator trainer, a Senior Fisheries Biologist with relevant qualifications for the NRSA 2019 fish tissue training, or other staff with previous relevant NRSA training or field crew leader experience. The 2019 series of NRSA training workshops will consist of a Train-the-Trainer workshop that will be scheduled in March 2019 and up to 11 training workshops held in the EPA Regions from March or April through June 2019. Based on the 2018 training schedules for the NRSA, the Contractor shall assume that the workshops last 4 days and they are generally scheduled on Monday, Tuesday, Wednesday, and Thursday during the designated week with travel to and from each workshop scheduled on Sunday and Friday. The specific dates and locations for each of the NRSA 2019 training workshops have not yet been scheduled, so use the following information for estimating costs:

- Assume that the 2019 NRSA Train-the-Trainer workshop will be held in the vicinity of Sacramento, CA during March 2019.
- Assume that the Region 1 NRSA training workshop will be held in North Chelmsford, MA during June 2019.
- Assume that the Region 2 NRSA training workshop will be held in the vicinity of Trenton, NJ during May 2019.
- Assume that the Region 3 NRSA training workshop will be held in Wheeling, WV during May 2019.
- Assume that the Region 4 NRSA training workshop will be held in Athens, GA during April 2019.

- Assume that the Region 5 NRSA training workshop will be held in the vicinity of Chicago, IL during May 2019.
- Assume that the Region 6 NRSA training workshop will be held in the vicinity of Dallas, TX during April 2019.
- Assume that the Region 7 NRSA training workshop will be held in Kansas City, KS during May 2019.
- Assume that the Region 8 NRSA training workshop will be held in the vicinity of Denver, CO during June 2019.
- Assume that the Region 9 NRSA training workshop will be held in the vicinity of Sacramento, CA during April 2019.
- Assume that the Region 10 NRSA training workshop will be held in the vicinity of Portland, OR during June 2019.
- Assume that one additional NRSA training workshop will be held in Traverse City, MI during May 2019.

For ***Activity 4***, the Contractor shall provide support for follow-up activities to training, meetings, and workshops. These activities may include the following:

- Developing training/meeting/workshop evaluations and summarizing suggestions to improve future training/meetings/workshops.

- Preparing and distributing meeting summaries electronically to attendees.

- Documenting issues for resolution based on discussions during training, meetings, conferences, or workshops.

- Revising and distributing study materials based on resolution of issues identified during training, meetings, conferences, or workshops.

- Responding to follow-up process questions from training, meeting, conference, or workshop participants.

- Contacting training, meeting, conference, or workshop participants to obtain additional information for the studies.

Task 4: Support for Planning, Organizing, Implementing, and Reporting Field Sampling Activities

EPA requires support for planning, organizing, implementing, and reporting field sampling activities for the selenium phase of the Fish Plug Evaluation Study and for the 2018-19 NRSA human health fish tissue study. Preliminary elements of the fish sampling designs for each study are summarized below.

Fish Plug Evaluation Study (Selenium Phase)

1. Fish sampling will be conducted in two waterbody types, the Great Lakes and U.S. rivers. Lake Erie, Lake Michigan and Lake Ontario are designated for Great Lakes fish collection, and the Anacostia River, Potomac River, and St. Lawrence River are designated for river fish collection.
2. Individual whole fish samples shall be collected from each waterbody type to provide fillet plug and homogenized fillet tissue samples for selenium analysis.
3. To provide tissue samples for selenium analysis, 5 specimens each of 3 Great Lakes species and 5 specimens each of 3 river species are collected from the designated Great Lakes and rivers. Target species for the Great Lakes and rivers are the same as for mercury phase of the study. The Great Lakes target species are walleye (Lake Erie), lake trout (Lake Michigan), and Chinook salmon (Lake Ontario). River target species are blue catfish (Anacostia River), largemouth bass (Potomac River), and smallmouth bass (St. Lawrence River). This fish sampling effort will yield 30 individual whole fish samples to be prepared for selenium analysis.
4. Four replicates each of three types of fish tissue samples are prepared from each individual whole fish sample collected for selenium analysis: field-extracted fillet plug samples, lab-extracted fillet plug samples, and lab-prepared homogenized fillet tissue samples. This yields 360 fillet tissue samples consisting of 120 field fillet plug samples (2 plugs per sample), 120 lab fillet plug samples (2 plugs per sample), and 120 homogenized fillet tissue samples for selenium analysis (30 fish x 3 tissue sample types per fish x 4 replicates per tissue sample type = 360 fish tissue samples).
5. EPA's tissue-based water quality criterion for selenium is expressed as a dry weight concentration. To provide data to convert total selenium wet weight concentrations to dry weight concentrations, the selenium phase includes analysis of an additional 360 fillet tissue samples for percent (%) moisture that correspond to each of the fillet tissue samples for total selenium analysis. The % moisture samples consist of the following: 120 single-plug fillet samples collected in the field, 120 single-plug fillet samples collected in the lab, and 120 one-gram aliquots of homogenized fillet tissue samples.

2018-19 NRSA Human Health Fish Tissue Study

1. Fish sampling is being conducted in U.S. rivers (5^{th} order or higher based on Strahler stream order) in the lower 48 states.
2. A total of 477 river sites (which comprise a statistically representative subset of the approximately 1800 NRSA 2018-19 sampling sites) were selected for human health fish sample collection. One fish composite sample is collected at each of these river sites. The goal is to obtain fish samples from a minimum of 384 of the selected sampling sites.
3. Fish composite samples consist of 5 adult fish of the same species (species commonly caught and consumed by recreational fishers) and similar lengths (the length of the smallest specimen is no less than 75% of the length of the largest specimen in the composite sample).
4. Each fish composite sample is processed in a laboratory to prepare multiple aliquots of homogenized fillet tissue for target chemical analyses.

To obtain the target number and type of fish samples for each study, the Contractor shall provide support for the following activities related to field sampling:

1. Sampling site evaluations
2. Logistical and technical support for planning and implementing collection, handling, and shipment of fish samples
3. Development and distribution of field sampling reports

Under ***Activity 1***, the Contractor shall provide support for 2018-19 NRSA site evaluations for the 477 river locations designated for whole fish sampling (and subsequent analysis of fillet tissue samples). These human health whole fish sampling sites are a subset of the total number of river sites selected for the 2018-19 NRSA. States, EPA Regions, or other study participants initially conduct desktop or field reconnaissance for each of these sites to determine whether they meet the study criteria for a target sampling location and whether adequate access is available for sample collection. The Contractor shall review whole fish sampling site designations added to each individual state site evaluation spreadsheet (about 65 total spreadsheets for participating field crews) for accuracy using the existing list of 477 selected whole fish sampling sites. The Contractor shall also obtain, summarize, and periodically update site evaluation information related to whole fish sampling site classifications (e.g., non-target or inaccessible locations).

Additionally for ***Activity 1***, the Contractor shall identify Great Lakes and river sampling sites for the selenium phase of the Fish Plug Evaluation Study based on publicly available access to the sites, availability of target species, and location records for sampling success during the mercury phase of the study.

For ***Activity 2***, the Contractor shall provide logistical and technical support for planning and implementing collection, handling, and shipment of whole fish samples (for fillet analysis) from the 477 designated 2018-19 NRSA river sites. This support shall consist of, but not be limited to, the following activities:

- Developing and maintaining field sampling contact lists related to the human health whole fish sampling sites.

- Updating human health fish sampling protocols, as applicable, for incorporation into field sampling documents, such as the set of 2018-19 NRSA Field Operations Manuals (NonWadeable and Wadeable) and the Field Sampling QAPP that will be produced by EPA's Office of Wetlands, Oceans, and Watersheds.

- Reviewing and preparing comments, as applicable, on 2018-19 NRSA documents and forms related to fish sampling activities for the human health fish tissue study.

- Ordering expendable field supplies and maintaining field sampling equipment (e.g., coolers) to support field operations for collecting whole fish samples for fillet analysis from the 477 designated human health fish study river sites.

- Assembling and shipping human health whole fish sampling kits and coolers directly to field crew leaders to respond to initial orders from the NRSA training workshops; for subsequent orders, shipping whole fish sampling kits and coolers to the 2018-19 NRSA central field sampling supply center in Traverse City, MI for distribution to field crews.

- Obtaining information on field crews assigned for sampling in each state and their field sampling schedules to summarize and forward to the EPA WACOR; updating field sampling schedule information at regular intervals (weekly, as applicable).

- Tracking shipment of whole fish sampling supplies to field crews around the country and to the NRSA central supply center in Traverse City, MI, and shipment of coolers containing whole fish samples from field sampling locations to Microbac Laboratories in Baltimore, MD for interim storage.

- Communicating field sampling issues to the EPA WACOR for resolution and documenting the issues and EPA decisions for resolution of these issues.

- Tracking and documenting all 2018-19 NRSA human health whole fish sampling activities during the 2018 field season (through September or October 2018) and the beginning of the 2019 field season (May and June 2019), and preparing weekly progress reports summarizing these fish sampling activities for the EPA WACOR. The Contractor shall develop and submit weekly progress reports with content and format comparable to weekly fish sampling progress reports prepared for the initial months of the 2018 NRSA field season under WA 3-01.

- Compiling the collective fish sampling results from the NRSA 2018 field season into an Excel spreadsheet to prepare the first year of the 2018-19 NRSA Fish Fillet Tissue Study Master Spreadsheet and submitting the 2018 NRSA Master Spreadsheet for EPA WACOR review and approval. The Contractor shall include the same types of information in this Master Spreadsheet that occur in ones developed for other EPA fish tissue studies (e.g., 2013-14 NRSA Fish Fillet Tissue Study).

- Maintaining files of the fish sampling records for the 2018-19 NRSA human health fish tissue study sampling sites.

Additionally for ***Activity 2***, the Contractor shall provide logistical support for planning and implementing collection, handling, and shipment or transport of whole fish and fish plug samples from the designated Great Lakes and river sites for the selenium phase of the Fish Plug Evaluation Study. This support shall consist of, but not be limited to, the following activities:

- Planning logistics for fish sampling in the designated Great Lakes and mid-Atlantic rivers and submitting fish sampling plans to the EPA WACOR. In preparing the fish sampling plans for the selenium phase of the Fish Plug Evaluation Study, the Contractor shall assume up to three trips to the Great Lakes and up to three trips to the mid-Atlantic rivers for fish sample collection. The Contractor shall specify fish sampling staff, locations, and dates in each plan.

- Ordering expendable field supplies to support field operations for collecting whole fish and fish plug samples from the designated Great Lakes and river sites.

- Assembling and transporting whole fish and fish plug sampling kits and coolers to the designated Great Lakes and river sites for conducting fish sampling operations.

- Obtaining fish sample collection permits, as required, from applicable Great Lakes and mid-Atlantic states prior to conducting fish sampling operations.

- Collecting the target number and species of whole fish samples identified in the Fish Plug Evaluation Study selenium phase sampling design (refer to the sampling design summary at the beginning of **Task 4**) and specified in the existing Fish Plug Evaluation Study Sample Collection and Preparation QAPP, completing fish sampling forms for each collection site, and reporting results of each fish sampling trip to the EPA WACOR.

- Extracting fillet plug samples from each whole fish sample, labeling each plug sample, shipping or transporting the fillet plug samples to the Tetra Tech fish sample preparation lab in Owings Mills, MD for interim storage, tracking the progress of each shipment (as applicable), and reporting final delivery and sample condition information to the EPA WACOR.

- Preparing whole fish samples for transport or shipment to the Tetra Tech fish sample preparation lab in Owings Mills, MD, including wrapping and labeling each sample and packing the fish samples on dry ice in coolers for shipment or storing them in a portable freezer for transport.

- Tracking shipment of whole fish samples, as applicable, to the Tetra Tech fish sample preparation lab in Owings Mills, MD and reporting final delivery and sample condition information to the EPA WACOR.

- Communicating fish sampling issues to the EPA WACOR for resolution and documenting the issues and EPA decisions for resolution of these issues.

- Compiling the collective fish sampling results into an Excel spreadsheet to prepare the Fish Plug Evaluation Study Master Spreadsheet and submitting the

Master Spreadsheet for EPA WACOR review and approval. The Contractor shall include the same types of information in this Master Spreadsheet that occur in the Master Spreadsheets developed for other EPA fish tissue studies.

- Maintaining files of fish sampling records for the Fish Plug Evaluation sampling sites.

Under *Activity 3*, the Contractor shall provide ongoing support for preparing fish sampling reports for fish contamination studies, including fish sampling information summaries and cumulative fish sampling activity reports. During the WA performance period, fish sampling reporting will focus on completing the 2010 GLHHFTS and 2013-14 NRSA cumulative fish sampling activity reports drafted during prior work assignments and on developing a cumulative fish sampling activity report for the 2015 GLHHFFTS and for the Fish Plug Evaluation Study. The Contractor shall incorporate EPA WACOR comments on the existing draft 2010 GLHHFTS and 2013-14 NRSA cumulative fish sampling activity reports to produce the final 2010 GLHHFTS and 2013-14 NRSA cumulative fish sampling activity reports, respectively. The EPA WACOR will review and approve each of these fish sampling final reports. In addition, the Contractor shall prepare a cumulative fish sampling activity report for the 2015 GLHHFFTS and for the Fish Plug Evaluation Study using the final cumulative fish sampling activity reports from previous fish studies as templates for developing the content and format for these reports. The Contractor shall incorporate EPA WACOR comments on the draft 2015 GLHHFFTS and Fish Plug Evaluation Study cumulative fish sampling activity reports to produce the final 2015 GLHHFFTS and Fish Plug Evaluation Study cumulative fish sampling activity reports, respectively. The EPA WACOR will review and approve these final cumulative fish sampling activity reports.

Task 5: Support for Laboratory Preparation of Fish Tissue Samples

During this WA period of performance, EPA requires support for laboratory preparation of fish tissue samples from two studies: the Fish Plug Evaluation Study and the 2018-19 NRSA Human Health Fish Tissue Indicators. The fish sample preparation requirements vary between the two studies, so the Contractor activities to support each study are described separately below.

Fish Plug Evaluation Study

The Contractor shall provide support for laboratory preparation of Fish Plug Evaluation Study fillet tissue samples for mercury and selenium analysis during the WA period of performance. The Fish Plug Evaluation Study sampling design specifies that 90 individual fish samples will be collected for the study, including 60 fish for mercury analysis during the mercury phase of the study and 30 fish for selenium analysis during the selenium phase of the study. Each fish sample preparation batch for the mercury phase consists of 2 fish, so there are 30 fish sample preparation batches for mercury analysis. Each fish sample preparation batch for the selenium phase consists of 5 fish, so there are 6 fish sample preparation batches for selenium analysis. The Contractor

shall prepare fillet tissue samples from fish collected for the Fish Plug Evaluation Study as described below.

EPA expects to complete processing of at least 18 of the 30 fish sample preparation batches for mercury analysis under WA 3-01, leaving up to 12 mercury phase fish sample preparation batches to process during the current WA period of performance. The Contractor shall prepare the remaining fish sample preparation batches for the mercury phase of the study to produce a corresponding number of mercury analysis batches. Each mercury analysis batch of 20 fillet samples consists of 10 lab-extracted fillet plug samples and 10 homogenized fillet tissue samples (which represents 5 replicates of each type of fillet sample from each of the two fish in the sample preparation batch). The number of grams of fillet tissue required for each plug and homogenized fillet sample is specified in Revision 1 of the Fish Plug Evaluation Study Sample Collection and Preparation QAPP, which was developed and approved under WA 3-01.

The Contractor shall assign the 30 fish collected for the selenium phase of the Fish Plug Evaluation Study into 6 fish sample preparation batches and process each of these fish sample preparation batches to prepare the required number of fillet plug and homogenized fillet tissue samples specified in Revision 2 of the Fish Plug Evaluation Study Sample Collection and Preparation QAPP. For each individual fish, these consist of the following: 4 replicate double-plug lab fillet samples for selenium analysis, 4 replicate single-plug lab fillet samples for % moisture analysis, 4 replicate 5-gram homogenized fillet samples for selenium analysis, 4 replicate 1-gram homogenized fillet samples for % moisture analysis, and additional homogenized fillet tissue samples for lipid analysis and for archiving fillet tissue as described below. Each fish sample preparation batch shall consist of the five fish samples collected from a specific waterbody (i.e., Lake Erie, Lake Michigan, Lake Ontario, Anacostia River, Potomac River, and St. Lawrence River) and be processed in chronological order (oldest fish samples processed first). Processing each fish sample preparation batch produces two selenium analysis batches containing 20 lab-extracted fillet plug samples in one batch and 20 homogenized fillet samples in the other batch. Each fish sample preparation batch also produces two corresponding batches for % moisture analysis, i.e., one batch of 20 single-plug lab fillet samples and one batch of 20 one-gram homogenized fillet tissue samples. The number of grams of fillet tissue required for each homogenized fillet sample is specified in Revision 2 of the Fish Plug Evaluation Study Sample Collection and Preparation QAPP. Development of Revision 2 of this QAPP was initiated under WA 3-01.

For both the mercury and selenium phases of the Fish Plug Evaluation Study, the Contractor shall prepare additional homogenized fillet tissue samples for lipid analysis and for archived samples that may be used for future analyses. The number of aliquots and grams per aliquot for these additional homogenized fillet tissue samples are specified in Revisions 1 and 2 of the Fish Plug Evaluation Study Sample Collection and Preparation QAPP.

Other specific Contractor support for the Fish Plug Evaluation Study fillet tissue sample preparation shall consist of, but not be limited to, the following activities:

- completing development of the fillet tissue sample preparation SOP for the selenium phase of the Fish Plug Evaluation Study, as applicable

- ordering supplies necessary to implement each chemical-specific (mercury and selenium) fillet tissue sample preparation SOP

- providing the laboratory space and fish sample preparation equipment that will meet the requirements specified in each chemical-specific (mercury and selenium) fillet tissue sample preparation SOP

- ensuring that staff assigned to do the fillet tissue sample preparation are adequately trained in filleting techniques and in the entire series of procedures described in both the mercury and selenium phase fillet tissue sample preparation SOPs

- assigning a Senior Fisheries Biologist with extensive filleting and fillet tissue sample preparation experience to provide training, technical assistance, and performance monitoring for fillet tissue sample preparation staff

- preparing QC samples during fillet tissue sample preparation and obtaining laboratory services for analysis of these samples (i.e., triplicate lipid samples, mercury rinsate and solvent blank samples, and selenium rinsate and solvent blank samples) and for lipid analysis of one homogenized fillet sample from the second fish in a mercury phase fish sample preparation batch and from each of the four remaining fish in a selenium phase fish sample preparation batch, and reporting results of these analyses to the EPA WACOR

- preparing and submitting fillet tissue sample preparation weekly progress reports to the EPA WACOR

- providing secure freezer space for interim storage of whole fish and fish tissue samples

- packing QC and fillet tissue samples for rinsate and lipid analysis in coolers and shipping these samples to the laboratory procured by the Contractor to analyze these samples

- packing fillet samples for chemical analysis (mercury for the mercury phase of the study and selenium and percent moisture for the selenium phase of the study) and shipping these samples to laboratories specified by the EPA WACOR

- tracking shipment of QC and fillet tissue samples to the designated analytical laboratories and reporting delivery information (i.e., delivery date and time) and sample condition at time of delivery to the EPA WACOR

The Contractor shall complete development of an existing draft fillet tissue sample preparation SOP for the selenium phase of the Fish Plug Evaluation Study, as applicable. The SOP shall include procedures and requirements for all fillet tissue sample preparation activities, including the following:

- weighing and recording weights for each fish prior to filleting
- extracting lab fillet plugs, then filleting and homogenizing the fillet tissue from the 30 individual fish collected for selenium analysis, and preparing fillet tissue aliquots for chemical analysis (selenium, percent moisture, and lipids)
- cleaning equipment between processing of fish samples
- conducting QC for tissue homogenization (i.e., triplicate lipid analyses) and for potential chemical contamination of fillet tissue during processing (i.e., analysis of rinsate and solvent blank samples) for each selenium phase fish sample preparation batch
- providing interim storage for the whole fish and for the fillet tissue samples
- shipping the fillet tissue samples to laboratories specified by the EPA WACOR

The Contractor shall prepare a draft final SOP for EPA WACOR review and incorporate EPA WACOR comments to produce the final SOP. The Contractor shall submit the final SOP to the EPA WACOR for review and approval.

The Contractor shall order laboratory supplies necessary for preparing and shipping fillet tissue samples based on the requirements specified in the mercury phase and selenium phase fillet tissue sample preparation SOPs. These supplies include, but are not limited to, nitrile gloves, biopsy punches for extracting plug samples, utensils for scaling and filleting fish, cutting boards, containers for holding the bulk homogenized fish tissue during processing, solvents for cleaning fish sample preparation equipment, vials for lab-extracted plug samples and jars for homogenized fillet tissue sample aliquots, coolers, and dry ice for fillet homogenization and for shipping fillet tissue sample jars and vials. The Contractor shall use only food-grade dry ice pellets for homogenizing fillets and only dry ice blocks for shipping fillet tissue samples. The Contractor shall obtain these supplies sufficiently in advance of the schedules for initiating fish sample preparation and for shipping fillet tissue samples to designated laboratories to avoid any unnecessary delays in the fish tissue sample preparation operations for each phase of the Fish Plug Evaluation Study.

The Contractor shall provide adequate laboratory space and equipment necessary to complete all aspects of the fillet tissue sample preparation for both phases of the Fish Plug Evaluation Study. The respective SOPs shall specify these requirements based on requirements that applied to fish sample preparation activities for previous fish tissue studies. EPA anticipates that the laboratory space and equipment requirements shall be similar to those that applied for the 2015 GLHHFFTS fish sample preparation operations with any necessary adjustments to add extraction of fish plug samples in the laboratory.

The Contractor shall ensure that staff assigned to conduct fillet tissue sample preparation activities are knowledgeable about and adequately trained on the entire series of fillet tissue sample preparation procedures and requirements for each phase of the Fish Plug Evaluation Study. These procedures include, but are not limited to, weighing individual fish prior to

initiating fillet tissue sample preparation, extracting fillet plugs, scaling and filleting fish, homogenizing fillet tissue, cleaning fillet tissue sample preparation equipment, preparing fillet tissue sample aliquots, and recording all the required information for weekly progress reports on laboratory bench sheets prepared for each phase of the study under WA 3-01.

The Contractor shall provide a Senior Fisheries Biologist with extensive experience filleting fish and supporting fish tissue sample preparation for EPA fish tissue studies (e.g., 2015 GLHHFFTS) to train staff in developing the technical skills necessary to successfully complete all fillet tissue sample preparation activities for both phases of the Fish Plug Evaluation Study. The Senior Fisheries Biologist shall also be responsible for providing technical assistance, as required, and for monitoring the performance of fillet tissue sample preparation staff to ensure that they adhere to all of the requirements in the fillet tissue sample preparation SOPs for each phase of the study.

The Contractor shall prepare the QC samples for each remaining mercury phase fish sample preparation batch (an estimated 6 batches) and for each selenium phase fish sample preparation batch (6 batches). The QC samples for each mercury phase batch include one triplicate set of homogenized fillet samples for lipid analysis and a pair of aqueous samples consisting of a mercury rinsate sample and a solvent (de-ionized or DI water) blank sample from the first fish in the batch. The QC samples for each selenium phase batch include one triplicate set of homogenized fillet samples for lipid analysis and a pair of aqueous samples consisting of a selenium rinsate sample and a solvent (DI water) blank sample from one of the five fish in the sample preparation batch. In addition, the Contractor shall prepare a single homogenized fillet tissue sample for lipid analysis from the second fish in each mercury phase fish sample preparation batch and 4 homogenized fillet samples for lipid analysis from the 4 fish (one homogenized fillet sample per fish) in each selenium phase fish sample preparation batch not used for preparation of QC samples.

The Contractor shall obtain laboratory services for, and monitor analysis of, Fish Plug Evaluation Study fillet tissue sample preparation aqueous QC samples for metals and of homogenized fillet samples (triplicate QC fillet samples and single fillet samples) for lipids. The EPA WACOR shall approve methods to analyze the aqueous QC samples for metals and the homogenized fillet tissue samples for lipids prior to the designated laboratory initiating analysis of these aqueous QC samples and homogenized fillet samples. The Contractor shall coordinate data delivery schedules for the QC samples with the EPA WACOR prior to completing the analytical laboratory procurement process to avoid delays in the EPA schedule for preparing each batch of fillet tissue samples for the Fish Plug Evaluation Study. The Contractor shall be responsible for reporting lipid and QC sample analysis results to the EPA WACOR when they become available. The Fish Plug Evaluation Study Sample Collection and Preparation QAPP specifies criteria that the QC sample results must meet to be acceptable. This QAPP also identifies corrective actions that apply if the QC sample results do not meet the criteria.

During Fish Plug Evaluation Study fish sample preparation operations, the Contractor shall prepare and submit a weekly progress report to the EPA WACOR. In preparing the weekly progress reports, the Contractor shall use a format consistent with reporting Fish Plug Evaluation

Study fillet sample preparation status under WA 3-01. The Contractor shall submit each weekly progress report to the EPA WACOR on the Tuesday after the week that fillet sample preparation activities are completed.

The Contractor shall provide secure freezer space for interim storage of whole fish samples collected and fish fillet samples generated for the Fish Plug Evaluation Study. The Contractor shall ensure that there is sufficient freezer capacity for temporary storage of up to 50 whole fish (of the species identified under **Task 4**) and up to 400 fillet tissue samples in containers of various sizes. The Contractor shall store the whole fish and fillet tissue samples in accordance with QAPP requirements (e.g., temperatures less than or equal to - 20 degrees Celsius). In case of a power failure, the Contractor shall have an emergency backup plan to keep all the whole fish and fillet tissue samples frozen at temperatures below - 20 degrees Celsius. The Contractor shall refrigerate the aqueous QC samples until they are ready for shipment or transport.

The Contractor shall be responsible for packing Fish Plug Evaluation Study fillet tissue samples and aqueous QC samples for shipment to various analytical laboratories under contract to analyze these samples. The Contractor shall obtain sufficient quantities of dry ice blocks to preserve the fillet tissue samples in a cooler for at least 48 hours while in transit to the designated analytical laboratory (e.g., a minimum of 30 pounds of dry ice blocks per cooler for up to 10 pounds of fillet tissue samples). The Contractor shall not use dry ice pellets for shipment of any fish tissue samples to analytical laboratories. To prepare the mercury and selenium aqueous QC samples for transport or shipment to designated analytical laboratories, the Contractor shall follow procedures consistent with those used to transport or ship Fish Plug Evaluation Study aqueous QC samples under WA 3-01. The Contractor shall ship coolers containing fillet tissue samples or aqueous QC samples using an overnight express delivery service and specify priority delivery the next morning. For shipment of fillet tissue samples to any analytical laboratory not procured by the Contractor, the EPA WACOR will provide the laboratory shipping address and point of contact information (e.g., name, phone number, and email address) for shipping the fillet tissue samples for target chemical analyses (mercury, selenium, and percent moisture). When shipping selenium phase samples, the Contractor shall ship corresponding selenium analysis and % moisture analysis batches together so the designated laboratory can analyze them and report the results concurrently.

The Contractor shall track shipment of Fish Plug Evaluation Study QC and fillet tissue samples until they reach the designated analytical laboratories. For each shipment, the Contractor shall report the delivery time and date to the EPA WACOR by close of business on the date of delivery. For delivery of QC samples and fillet samples for lipid analysis, the Contractor shall also report the sample condition when delivered within 24 hours of delivery to the EPA WACOR.

2018-19 NRSA Human Health Fish Tissue Indicators

The Contractor shall provide support for laboratory preparation of 2018-19 NRSA human health fish tissue indicator fillet samples for target chemical analysis. The 2018-19 NRSA study design specifies that one fish composite sample shall be collected from up to 477 river sites for the

human health fish tissue indicators (i.e., the fillet plug indicator and the homogenized fillet tissue indicator). Fish sample preparation for each fish composite sample involves initially removing one fillet plug from each of two fish in the composite specified by the EPA WACOR (via written technical direction) to provide samples for the fillet plug indicator, then removing and homogenizing all the available fillet tissue from every fish in the composite to prepare samples for the homogenized fillet tissue indicator. Each fish sample preparation batch for the 2018-19 NRSA human health fish tissue indicators consists of 20 fish composite samples. The Contractor shall prepare fillet tissue samples from fish composite samples collected for the 2018-19 NRSA human health fish tissue indicators as described below.

During the WA period of performance, Contractor support for laboratory preparation of 2018-19 NRSA human health fish tissue indicator fillet samples for target chemical analyses shall consist of, but not be limited to, the following activities:

- developing a project-specific fillet tissue sample preparation SOP to be appended to the 2018-19 NRSA Fish Sample Preparation QAPP

- assigning 2018-19 NRSA fish composite samples to individual fish sample preparation batches and preparing fish sample preparation instructions for each batch of these samples

- ordering supplies necessary to implement 2018-19 NRSA fillet tissue sample preparation SOP

- providing the laboratory space and fillet tissue sample preparation equipment that shall meet the requirements specified in the fillet tissue sample preparation SOP

- ensuring that staff assigned to do the fillet tissue sample preparation are adequately trained in filleting techniques and in the entire series of procedures and requirements described in the 2018-19 NRSA fillet tissue sample preparation SOP

- assigning a Senior Fisheries Biologist with extensive filleting and fish tissue sample preparation experience to provide training, technical assistance, and performance monitoring for fish tissue sample preparation staff

- preparing the fillet tissue samples for the 2018-19 NRSA human health fish tissue indicators

- preparing QC samples during fillet tissue sample preparation and obtaining laboratory services for analysis of these samples (i.e., triplicate lipid samples and selected target chemical rinsate samples) and for lipid analysis of one homogenized fillet sample from each remaining fish composite sample in the fish sample preparation batch (e.g., for batches containing 20 fish composite samples,

single homogenized fillet samples shall be analyzed from 19 fish composite samples), and reporting results of these analyses to the EPA WACOR

- preparing and submitting fillet tissue sample preparation weekly progress reports to the EPA WACOR
- providing secure freezer space for interim storage of whole fish and fillet tissue samples
- packing QC and fillet tissue samples for rinsate and lipid analysis in coolers and shipping these samples to the laboratory procured by the Contractor to analyze these samples
- packing fillet samples for target chemical analysis (e,g., mercury, PCBs, and PFCs) and shipping these samples to laboratories specified by the EPA WACOR
- tracking shipment of QC and fillet tissue samples to the designated analytical laboratories and reporting delivery information (i.e., delivery date and time) and sample condition at time of delivery to the EPA WACOR

The Contractor shall develop a project-specific fillet tissue sample preparation SOP for the 2018-19 NRSA human health fish tissue indicators that describes procedures and requirements for all processing activities, including the following:

- weighing and recording weights of each individual fish in a fish composite sample
- removing fillet plug samples, then weighing and recording weights of the plug samples
- filleting and homogenizing the fillet tissue from up to 477 fish composite samples designated to be collected for the study
- preparing fillet tissue aliquots for target chemical analyses and for sample archives
- cleaning fillet tissue sample preparation equipment between processing of fish composite samples
- conducting QC for tissue homogenization (i.e., one triplicate lipid analysis for each batch of 20 samples; there could be a total of up to 24 batches) and for potential chemical contamination of fillet tissue during processing (i.e., analysis of a pair of rinsate and solvent blank samples for each target chemical per 20-sample batch for up to 24 batches)
- providing interim storage for the whole fish and for the fillet tissue samples
- shipping the fillet tissue samples to laboratories specified by the EPA WACOR

The EPA WACOR will provide the Contractor with a WORD copy of the 2013-14 NRSA fish sample preparation SOP to use as a template for development of this new SOP for the 2018-19 NRSA. At a minimum, the Contractor shall prepare an initial draft SOP, a draft final SOP, and a final SOP. The Contractor shall submit the initial draft SOP for EPA WACOR review and incorporate EPA WACOR comments to produce the final draft SOP, then follow the same steps with the draft final SOP to produce the final SOP. The Contractor shall submit the final SOP to the EPA WACOR for review and approval.

The Contractor shall prepare draft fish sample preparation instructions for the 2018-19 NRSA human health fish samples collected during the WA period of performance. In preparing the draft instructions, the Contractor shall apply the fish composite sample collection criteria (e.g., the same species criterion and the 75% fish length criterion) and use instruction language and formats consistent with fish sample preparation instructions developed for previous fish tissue studies (e.g., the 2013-14 NRSA human health fish tissue study). The Contractor shall submit draft instructions for EPA WACOR review and comment and prepare final fish sample preparation instructions based on EPA WACOR comments. The EPA WACOR will review and approve the final fish sample preparation instructions prior to the Contractor initiating any processing of fish tissue samples. The Contractor shall incorporate final fish sample preparation instructions into the fish sample collection Master Spreadsheet.

The Contractor shall assign 2018-19 NRSA human health fish samples collected during the WA period of performance to fish sample preparation batches. Each fish sample preparation batch shall contain 20 fish composite samples (except where there are fewer than 20 composite samples left to assign to a batch). The Contractor shall contact the EPA WACOR for direction if it may be necessary to assign fewer or greater than 20 fish composite samples to a batch (assignment of greater than 20 samples may be acceptable in cases where there are only one or two samples remaining after assignment of all other samples to batches). The Contractor shall use the same approach to assigning fish samples to sample preparation batches that EPA applied during the 2015 GLHHFFTS (i.e., similar numbers of numbers of fish per batch when the composite samples contain a variable number of fish, similar types of fish species per batch, etc.). The EPA WACOR will review and approve assignment of the fish samples to fish sample preparation batches.

The Contractor shall order laboratory supplies necessary for preparing and shipping fillet tissue samples based on the requirements specified in the 2018-19 NRSA fillet sample preparation SOP. These supplies include, but are not limited to, nitrile gloves, utensils for scaling and filleting fish, cutting boards, containers for holding the bulk homogenized fillet tissue during processing, solvents for cleaning fish sample preparation equipment, jars for fillet tissue sample aliquots designated for target chemical analyses and sample archives, coolers, and dry ice for fillet homogenization and for shipping fillet tissue sample jars. The Contractor shall obtain only food-grade dry ice pellets for homogenizing fillets and only dry ice blocks for shipping fish tissue samples. The Contractor shall obtain these supplies sufficiently in advance of the schedule for initiating fish sample preparation and for shipping fillet tissue samples to designated laboratories to avoid any unnecessary delays in the fish tissue sample preparation operations for each phase of the Fish Plug Evaluation Study. EPA will provide the biopsy punches for extracting fillet plug samples in the laboratory and the vials for storing the fillet plug samples and shipping them to the designated analytical laboratory for mercury analysis.

The Contractor shall provide adequate laboratory space and equipment necessary to complete all aspects of the fillet tissue sample preparation for the 2018-19 NRSA. The laboratory space and equipment requirements for the 2018-19 NRSA shall be comparable to these requirements for the Fish Plug Evaluation Study.

The Contractor shall ensure that staff assigned to conduct fillet tissue sample preparation activities are knowledgeable about and adequately trained on the entire series of fillet tissue sample preparation procedures and requirements for the 2018-19 NRSA. These procedures include, but are not limited to, weighing individual fish and recording their weights prior to initiating fillet tissue sample preparation; extracting fillet plugs, then weighing and recording their weights before storing them in vials; scaling and filleting fish; homogenizing fillet tissue; cleaning fillet tissue sample preparation equipment; preparing fillet tissue sample aliquots; and recording all the required information for weekly progress reports on laboratory bench sheets developed for this study and provided in the 2018-19 NRSA Fish Sample Preparation QAPP.

The Contractor shall provide a Senior Fisheries Biologist with extensive experience filleting fish and supporting fish tissue sample preparation for EPA fish tissue studies (e.g., 2015 GLHHFFTS) to train staff in developing the technical skills necessary to successfully complete all fillet tissue sample preparation activities for the 2018-19 NRSA. The Senior Fisheries Biologist shall also be responsible for providing technical assistance (e.g., filleting and homogenizing sensitive composite samples that may not yield the minimum amount of tissue mass necessary to prepare all fillet tissue aliquots), as required, and for monitoring the performance of fillet tissue sample preparation staff to ensure that they adhere to the all the requirements in the fillet tissue sample preparation SOP for this study.

The Contractor shall implement the 2018-19 NRSA fillet tissue sample preparation SOP to prepare the fillet tissue samples required for the 2018-19 NRSA human health fish tissue indicators. Field crews shall collect one fish composite sample from each of the 477 river sites designated for whole fish sampling where site access and appropriate target species (including numbers and lengths) are available. The fillet tissue samples required for the 2018-19 NRSA human health fish tissue indicators include one fillet plug sample per fish composite sample and a series of up to 9 homogenized fillet tissue samples specified in the fillet tissue sample SOP (5 homogenized fillet tissue samples for target chemical analysis and 4 for sample archives). EPA anticipates that up to 250 fish composite samples shall be collected for fillet tissue sample preparation during the WA period of performance (up to 4 months during the 2018 field season and up to 2 months during the 2019 field season).

The Contractor shall prepare a set of QC samples from one fish composite sample in each of the 2018-19 NRSA fish sample preparation batches following the procedures described in the fillet tissue sample preparation SOP. This set of QC samples includes one triplicate set of homogenized fillet samples for lipid analysis and a pair of aqueous samples consisting of a rinsate sample and a solvent blank sample for each target chemical (e.g., mercury, PCBs, and PFCs). The EPA WACOR will provide information about what solvent to use in preparing the pair of aqueous QC samples for each target chemical. In addition, the Contractor shall prepare a single homogenized fillet tissue sample for lipid analysis from each remaining fish composite sample in the fish sample preparation batch (e.g., for batches containing 20 fish composite samples, single homogenized fillet samples will be analyzed from 19 fish composite samples).

The Contractor shall obtain laboratory services for, and monitor analysis of, 2018-19 NRSA fillet tissue sample preparation aqueous QC samples for selected target chemicals (e.g., mercury

and PCBs) and of homogenized fillet samples (triplicate QC samples and single fillet samples) for lipids. The EPA WACOR shall approve methods to analyze the aqueous QC samples for selected target chemicals and the homogenized fillet samples for lipids prior to the designated laboratory or laboratories initiating analysis of these aqueous QC samples and homogenized fillet samples. The Contractor shall coordinate data delivery schedules for the QC samples with the EPA WACOR prior to completing the analytical laboratory procurement process to avoid delays in the EPA schedule for preparing each batch of fillet tissue samples for the 2018-19 NRSA. The Contractor shall be responsible for reporting lipid and QC sample analysis results to the EPA WACOR when they become available. The 2018-19 NRSA Fish Sample Preparation QAPP specifies criteria that the QC sample results must meet to be acceptable. This QAPP also identifies corrective actions that apply if the QC sample results do not meet the criteria.

During 2018-19 NRSA fish sample preparation operations, the Contractor shall prepare and submit a weekly progress report to the EPA WACOR. In preparing the weekly progress reports, the Contractor shall use a format consistent with reporting Fish Plug Evaluation Study fillet sample preparation status under WA 3-01. The Contractor shall submit each weekly progress report to the EPA WACOR on the Tuesday after the week that fillet sample preparation activities are completed.

The Contractor shall provide secure freezer space for interim storage of whole fish samples collected and fish fillet samples generated for the 2018-19 NRSA. The Contractor shall ensure that there is sufficient freezer capacity for temporary storage of up to 60 whole fish composite samples (or up to 300 individual fish) and up to 800 fillet tissue samples in containers of various sizes. The Contractor shall store the whole fish and fillet tissue samples in accordance with the 2018-19 NRSA Fish Sample Preparation QAPP requirements (e.g., temperatures less than or equal to - 20 degrees Celsius). In case of a power failure, the Contractor shall have an emergency backup plan to keep all the whole fish and fillet tissue samples frozen at temperatures below - 20 degrees Celsius. The Contractor shall refrigerate the aqueous QC samples until they are ready for shipment or transport.

The Contractor shall be responsible for packing 2018-19 NRSA fillet tissue samples and aqueous QC samples for shipment to various analytical laboratories under contract to analyze these samples. The Contractor shall obtain sufficient quantities of dry ice blocks to preserve the fillet tissue samples in a cooler for at least 48 hours while in transit to the designated analytical laboratory (e.g., a minimum of 30 pounds of dry ice blocks per cooler for up to 10 pounds of fillet tissue samples). The Contractor shall not use dry ice pellets for shipment of any fish tissue samples to analytical laboratories. To prepare the target chemical (e.g., mercury aqueous QC samples for transport or shipment to designated analytical laboratories, the Contractor shall follow procedures consistent with those used to transport or ship Fish Plug Evaluation Study aqueous QC samples under WA 3-01. The Contractor shall ship coolers containing fillet tissue samples or aqueous QC samples using an overnight express delivery service and specify priority delivery the next morning. For shipment of QC and fillet tissue samples to any analytical laboratory not procured by the Contractor, the EPA WACOR will provide the laboratory shipping address and point of contact information (e.g., name, phone number, and email address) for shipping these samples for chemical analyses.

The Contractor shall track shipment of 2018-19 NRSA QC and fillet tissue samples until they reach the designated analytical laboratories. For each sample shipment, the Contractor shall report the delivery time and date to the EPA WACOR by close of business on the date of delivery. For delivery of QC and fillet samples for chemical analysis to laboratories procured by the Contractor, the Contractor shall also report the sample condition when delivered within 24 hours of delivery to the EPA WACOR.

Task 6: Support for Compiling, Integrating, Analyzing, Displaying, and Distributing Fish Study Data

EPA requires support for compiling, integrating, analyzing, displaying, and distributing fish contamination study data. Data releases shall include distribution of interim data to study participants, followed by public release of the data. Support under **Task 6** includes development of data summaries and displays for both interim and cumulative study results, along with integration of data sets for interim and final reporting. In response to EPA requirements, the Contractor shall provide support for a broad range of data management activities, including, but not limited to, the following:

1. Compilation of interim data for both internal and public release
2. Integration of data sets for cumulative release and for interim and final report production
3. Data analysis
4. Development of tabular and graphic data displays for various uses, including internal and external reports, briefings, oral and poster presentations, and online displays on EPA web sites
5. Distribution of data to a wide variety of audiences, including EPA programs, study participants, academic research programs, environmental organizations, industry associations, and the general public

Under ***Activity 1***, the Contractor shall provide staff with the appropriate skills and experience to organize, compile, and review fish contamination study data. Performing tasks under this activity shall require knowledge of both the study data elements and the study database. The Contractor shall be responsible for preparing hard copy and/or electronic copies of interim and cumulative data sets for release to study participants and the public in formats specified by the EPA WACOR. Releases may include a complete inventory of all data (e.g., public release data CDs), as well as data summaries (e.g., subsets of analytical results for fish tissue samples that exceed Agency human health screening values).

Under ***Activity 2***, the Contractor shall be responsible for integrating fish study data sets for cumulative presentations and for interim and final report production. Consistent with requirements for ***Activity 1***, this activity shall require knowledge of both the study data elements and the study database. Based on written technical direction from the EPA WACOR, the Contractor shall develop integrated data presentations in hard copy and/or electronic formats for Agency use and for distribution to states and other study participants and to the public.

Under *Activity 3*, the Contractor shall provide support for statistical analysis of fish study data and review of statistical analysis results. The Contractor shall be responsible for deriving statistical parameters specified by the EPA WACOR (e.g., standard statistical parameters, such as mean values, medians and other percentiles, confidence intervals, standard error, etc.). During this WA period of performance, EPA will require support for statistical analysis of the Fish Plug Evaluation Study mercury and selenium fish fillet tissue concentration data to compare the analytical results from the corresponding homogenized fillet tissue samples and fillet plug samples derived from the same individual whole fish samples. This support shall consist of reviewing and providing comments on a statistical analysis plan for analyzing the 900 mercury fillet tissue sample results and the 360 selenium fillet tissue sample results generated by the Fish Plug Evaluation Study. The Contractor shall prepare comments on the draft statistical analysis plan and submit them to the EPA WACOR to consider for incorporation into the final statistical analysis plan. The Contractor shall also be responsible for conducting an independent review of the Fish Plug Evaluation Study statistical analysis results and data analysis conclusions once the final statistical analysis plan is implemented under another EPA contract.

Under *Activity 4*, the Contractor shall develop tabular and graphic summaries of study results for a variety of uses as requested by the EPA WACOR. These data displays may be prepared for distribution with data releases or for use in briefings, workshops, symposia, fact sheets, posters and study reports. The Contractor shall provide staff with the appropriate skills to prepare tabular and graphic data displays, and the experience necessary to apply the study data appropriately in the context of the study design and objectives.

To perform data delivery tasks under *Activity 5*, the Contractor shall develop and maintain a study participant contact list for each fish contamination study and a distribution list for public release of National Lake Fish Tissue Study data CDs. The Contractor shall produce multiple copies of data deliverables on hard copy and/or electronic media based on EPA WACOR written technical direction and subject to limitations specified in the contract.

Task 7: Support for Development of Public Outreach Materials

The Contractor shall provide support for the development and review of public outreach materials for fish contamination studies and related topics. This shall include development of products such as fact sheets, brochures, posters, and materials for display on EPA web sites. The Contractor shall draft product text, develop or obtain appropriate graphics, design product layout, and meet all EPA specifications in the development of products for public distribution, including EPA requirements for displaying products online that are 508 compliant. The EPA WACOR will provide the Contractor with information on EPA specifications for producing public outreach materials. The Contractor shall prepare an initial draft product for EPA WACOR review, incorporate EPA WACOR comments to prepare a draft final product subject to both EPA WACOR review and review by the relevant EPA offices (e.g., Office of Science and Technology, Office of Water, Office of Public Affairs), and incorporate EPA WACOR and EPA review office comments to produce a final camera-ready and/or web-ready product. The Contractor shall also provide support for reviewing public outreach materials for fish

contamination studies and related topics developed by other sources (e.g., other EPA contractors or EPA offices, such as OWOW, GLNPO, or ORD). EPA anticipates that specific activities under this task during the WA performance period shall include, but are not limited to, the following:

- Prepare a new poster on the Fish Plug Evaluation Study and up to two poster updates for presentation at scientific conferences and/or meetings (e.g., 2018 AFS meeting, 2018 SETAC meeting, and 2019 National Fish Forum.

- Prepare a new poster on the 2015 GLHHFFTS results (e.g., PFCs, dioxins/furans, or fatty acids) for presentation at scientific conferences and/or meetings (e.g., the 2019 National Water Quality Monitoring Conference and/or a regional Great Lakes meeting).

- Review and/or develop new web materials for the 2013-14 NRSA Fish Fillet Tissue Study and the 2015 GLHHFFTS and updated web materials for other fish tissue studies (e.g., the 2008-09 NRSA Fish Tissue Study and the 2010 GLHHFTS). Contractor support for web materials shall include, but not be limited to:
  - preparing or updating project documents for online release (e.g., the National Pilot Study of Pharmaceuticals and Personal Care Products (PPCPs) in Fish Tissue Final Report)
  - developing or revising fact sheets (e.g., fact sheets on Contaminants of Emerging Concern (CECs) in fish)
  - creating or updating web text and graphics to describe project activities and/or results
  - producing materials in formats consistent with Agency requirements for posting them on the Internet.

Task 8: Support for Development of Final Study Reports

EPA requires support for development and review of final reports for the Fish Plug Evaluation Study and for fish contamination studies conducted by OST or collaboratively with GLNPO and other Great Lakes researchers. During the WA performance period, EPA anticipates requiring support for revision and/or completion of the fish contamination study final reports (i.e., technical journal articles) that were initiated under previous work assignments and for development of new technical journal articles reporting the Fish Plug Evaluation Study data and data from the 2015 GLHHFFTS, including the following:

- **Revision of the existing 2010 GLHHFTS technical journal article reporting mercury, PCB, and PBDE results to incorporate 2015 GLHHFFTS results for mercury and PCBs into the article.** In its current form, the existing Great Lakes journal article has been peer reviewed and fully reviewed and approved by

EPA management for publication. Contractor support for revising this journal article shall consist of, but not be limited to, the following:

- preparing a first draft article revision for EPA WACOR review,
- revising the first draft article revision based on EPA WACOR comments to produce a second draft article revision for coauthor review,
- revising the second draft article revision based on coauthor comments to produce a third draft article revision for internal peer review, if required (otherwise, the third draft article revision would be for EPA management review and all the subsequent steps would be adjusted accordingly),
- revising the third draft article revision based on comments from internal peer reviewers to produce a fourth draft article revision for EPA management review,
- compiling internal peer review comments and preparing a spreadsheet that includes the full set of comments and responses to each comment, if internal peer review is required,
- revising the fourth draft article revision based on EPA management review comments to produce a fifth draft article revision for submission to a technical journal,
- providing information to be used as a basis for technical journal selection,
- formatting the revised article to meet the selected technical journal requirements,
- completing the logistics for the revised journal article submission,
- revising the fifth draft article revision based on comments from external peer reviewers to produce the draft final revised article for final EPA management clearance,
- revising the draft final revised article based on final EPA management comments (if applicable) to produce the final revised journal article,
- resubmitting the final revised article to the journal editor for publication,
- compiling comments from external peer reviewers and the journal editor and preparing a spreadsheet that includes the full set of comments and responses to each comment for submission with the final revised technical journal article, *and*
- reviewing galley proofs of the final revised article to identify final article edits, then compiling and submitting the final edits to the journal editor.

All revised Great Lakes journal article drafts and related deliverables (e.g., comment response spreadsheets) listed above shall be subject to EPA WACOR review and approval. The final revised Great Lakes journal article and the galley proof edits shall also be subject to EPA WACOR review and approval before submission of these deliverables to the technical journal editor.

- **Completion of the existing 2013-14 NRSA technical journal article reporting mercury, PCB, and PFC results.** The existing journal article is in the third draft stage of development and currently undergoing coauthor review. Contractor

support for completing this journal article shall consist of, but not be limited to, the following:

- revising the third draft article based on coauthor comments to produce a fourth draft article for internal peer review,
- revising the fourth draft article based on comments from internal peer reviewers to produce a fifth draft article for EPA management review,
- compiling internal peer review comments and preparing a spreadsheet that includes the full set of comments and responses to each comment,
- revising the fifth draft article based on EPA management review comments to produce a sixth draft article for submission to a technical journal,
- providing information to be used as a basis for technical journal selection,
- formatting the article to meet the selected technical journal requirements,
- completing the logistics for journal article submission,
- revising the sixth draft article based on comments from external peer reviewers to produce the draft final article for final EPA management clearance,
- revising the draft final article based on final EPA management comments (if applicable) to produce the final journal article,
- resubmitting the final article to the journal editor for publication,
- compiling comments from external peer reviewers and the journal editor and preparing a spreadsheet that includes the full set of comments and responses to each comment for submission with the final technical journal article, *and*
- reviewing galley proofs of the article to identify final article edits, then compiling and submitting the final edits to the journal editor.

All 2013-14 NRSA journal article drafts and related deliverables (e.g., comment response spreadsheets) listed above shall be subject to EPA WACOR review and approval. The final 2013-14 NRSA revised journal article and the galley proof edits shall also be subject to EPA WACOR review and approval before submission of these deliverables to the technical journal editor.

- **Development of a new technical journal article reporting mercury phase results for the Fish Plug Evaluation Study.** The Contractor shall provide support for development of a new technical journal article reporting mercury phase results for the Fish Plug Evaluation Study. This support shall consist of, but not be limited to, the following:
  - developing an annotated outline for the journal article and submitting it for EPA WACOR review and approval,
  - preparing a first draft article for EPA WACOR review,
  - revising the first draft article based on EPA WACOR comments to produce a second draft article for coauthor review,
  - revising the second draft article based on coauthor comments to produce a third draft article for internal peer review,
  - revising the third draft article based on comments from internal peer reviewers to produce a fourth draft article for EPA management review,

- compiling internal peer review comments and preparing a spreadsheet that includes the full set of comments and responses to each comment,
- revising the fourth draft article based on EPA management review comments to produce a fifth draft article for submission to a technical journal,
- providing information to be used as a basis for technical journal selection,
- formatting the revised article to meet the selected technical journal requirements,
- completing the logistics for the journal article submission,
- revising the fifth draft article based on comments from external peer reviewers to produce the draft final article for final EPA management clearance (if applicable),
- revising the draft final article based on final EPA management comments (if applicable) to produce the final journal article,
- resubmitting the final article to the journal editor for publication,
- compiling comments from external peer reviewers and the journal editor and preparing a spreadsheet that includes the full set of comments and responses to each comment for submission with the final technical journal article, *and*
- reviewing galley proofs of the final revised article to identify final article edits, then compiling and submitting the final edits to the journal editor.

All mercury phase Fish Plug Evaluation Study journal article drafts and related deliverables (e.g., comment response spreadsheets) listed above shall be subject to EPA WACOR review and approval. The mercury phase Fish Plug Evaluation Study final journal article and the galley proof edits will also be subject to EPA WACOR review and approval before submission of these deliverables to the technical journal editor.

- **Development of a new technical journal article reporting selenium phase results for the Fish Plug Evaluation Study.** The Contractor shall provide support for development of a new technical journal article reporting selenium phase results for the Fish Plug Evaluation Study. This support shall consist of, but not be limited to, the following:
  - developing an annotated outline for the journal article and submitting it for EPA WACOR review and approval,
  - preparing a first draft article for EPA WACOR review,
  - revising the first draft article based on EPA WACOR comments to produce a second draft article for coauthor review,
  - revising the second draft article based on coauthor comments to produce a third draft article for internal peer review,
  - revising the third draft article based on comments from internal peer reviewers to produce a fourth draft article for EPA management review,
  - compiling internal peer review comments and preparing a spreadsheet that includes the full set of comments and responses to each comment,
  - revising the fourth draft article based on EPA management review comments to produce a fifth draft article for submission to a technical journal,
  - providing information to be used as a basis for technical journal selection,

- formatting the revised article to meet the selected technical journal requirements,
- completing the logistics for the journal article submission,
- revising the fifth draft article based on comments from external peer reviewers to produce the draft final article for final EPA management clearance (if applicable),
- revising the draft final article based on final EPA management comments (if applicable) to produce the final journal article,
- resubmitting the final article to the journal editor for publication,
- compiling comments from external peer reviewers and the journal editor and preparing a spreadsheet that includes the full set of comments and responses to each comment for submission with the final technical journal article, *and*
- reviewing galley proofs of the final revised article to identify final article edits, then compiling and submitting the final edits to the journal editor.

All selenium phase Fish Plug Evaluation Study journal article drafts and related deliverables (e.g., comment response spreadsheets) listed above shall be subject to EPA WACOR review and approval. The selenium phase Fish Plug Evaluation Study final journal article and the galley proof edits shall also be subject to EPA WACOR review and approval before submission of these deliverables to the technical journal editor.

- **Development of a new technical journal article reporting 2015 GLHHFFTS PFC results in collaboration with other Great Lakes researchers.** A Great Lakes scientist from another agency shall have the lead for preparing this article that shall report results from multiple studies of PFC contamination in Great Lakes fish. Contractor support for developing this journal article shall consist of preparing initial text and graphics related to the 2015 GLHHFFTS PFC results and any subsequent revisions to the initial text and graphics based on multiple reviews of the article. This support shall also include review and submission of comments on all drafts of the technical journal article and preparation of responses to peer reviewer comments related to the 2015 GLHHFFTS PFC results.

All draft and revised text and graphics developed to report 2015 GLHHFFTS PFC results in this journal article shall be subject to EPA WACOR review and approval. The final 2015 GLHHFFTS PFC text and graphics in this article will also be subject to EPA WACOR review and approval before submission of the final article to the technical journal editor.

- **Development of a new technical journal article reporting 2015 GLHHFFTS dioxin and furan results in collaboration with other Great Lakes researchers.** A scientist involved with other EPA-supported Great Lakes research shall have the lead for preparing this article that shall report results from multiple studies of dioxin and furan contamination in Great Lakes fish. Contractor support for developing this journal article shall consist of preparing initial text and graphics

related to the 2015 GLHHFFTS dioxin and furan results and any subsequent revisions to the initial text and graphics based on multiple reviews of the article. This support shall also include review and submission of comments on all drafts of the technical journal article and preparation of responses to peer reviewer comments related to the 2015 GLHHFFTS dioxin and furan results.

All draft and revised text and graphics developed to report 2015 GLHHFFTS dioxin and furan results in this journal article shall be subject to EPA WACOR review and approval. The final 2015 GLHHFFTS dioxin and furan text and graphics in this article shall also be subject to EPA WACOR review and approval before submission of the final article to the technical journal editor.

The Contractor shall provide support for reviewing a draft technical journal article reporting the fatty acid results for the 2015 GLHHFFTS. The Contractor shall review the draft technical journal article, prepare comments on the article, and submit the comments to the EPA WACOR. The Contractor shall also provide support for compiling comments from other technical journal article reviewers as specified by the EPA WACOR in written technical direction.

Task 9: General Technical Support

The Contractor shall provide general technical support for projects related to monitoring contaminants in fish and to identifying health risks associated with human consumption of fish. This support may include, but is not limited to, the following activities:

- Planning for future studies or enhancement of existing studies related to contaminants in fish tissue (e.g., NCCA 2020 Great Lakes Human Health Fish Fillet Tissue Study)

- Literature searches and other research to identify information for supporting fish tissue study planning and reporting (e.g., Fish Plug Evaluation Study mercury and selenium data reporting) and for developing EPA documents related to evaluating contaminants in fish and assessing human health risks from fish consumption (e.g., Revision of EPA's Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1: Fish Sampling and Analysis, 2000)

- Statistical support for development or review of technical presentations and reports related to the EPA Fish Program (e.g., independent reviews of data analyses conducted for technical reports)

- Technical reviews of proposed studies, presentations, guidance documents, journal articles, and reports related to the EPA Fish Program

- Participation on conference calls or webinars as technical experts on fisheries activities related to existing and future EPA fish tissue studies or to other studies related to the EPA Fish Program

- Preparation for final disposition and storage of project data (e.g., field sampling data and fish sample preparation data) and other project records for EPA fish tissue studies (e.g., National Lake Fish Tissue Study, PPCP Pilot Study, and 2008-09 NRSA Fish Tissue Study)

The Contractor shall perform specific activities for **Task 9** as assigned through written technical direction by the EPA WACOR. For cost estimating purposes, assume support for the following activities during the WA period of performance:

1. Planning for the NCCA 2020 Great Lakes Human Health Fish Fillet Tissue Study, including activities related to fish sampling site selection, identification of target fish species and target chemicals, development of updated field sampling protocols and other project information for field sampling documents, preparation of updated fish tissue training materials for training workshops, and logistical support for fish sampling.

2. Literature searches to support work on revision of the EPA Volume 1 Fish Advisory Guidance, publication of Fish Plug Evaluation Study mercury phase results, publication of Fish Plug Evaluation Study selenium phase results, and revision of the existing 2010 Great Lakes Human Health Fish Tissue Study paper to add 2015 Great Lakes Human Health Fish Fillet Tissue Study results.

3. Statistical support for review of data analyses in five technical presentations and reports.

4. Technical reviews of 12 documents, presentations, journal articles, or reports related to the EPA Fish Program.

5. Participation on 12 conference calls or webinars as technical experts on fisheries activities related to existing and future EPA fish tissue studies or to other studies related to the EPA Fish Program

6. Preparation for final disposition and storage of project data (e.g., field sampling data and fish sample preparation data) and other project records for three EPA fish tissue studies (i.e., National Lake Fish Tissue Study, PPCP Pilot Study, and 2008-09 NRSA Fish Tissue Study)

VII. DELIVERABLES AND SCHEDULE:

The Contractor shall provide all written deliverables, such as documents, reports, and summaries, in both hard copy and electronic form. The Contractor shall ensure that all software and fonts used to develop deliverables are readily available on the OST computer network and compatible

with OST printer systems. The Contractor shall follow the quality assurance and quality control plan under Contract Number EP-C-14-016 and the applicable fish contamination study QAPPs in preparing work assignment deliverables. EPA generally requires one to four hard copies for most deliverables. The specific number of copies that EPA requires for each deliverable will be identified in written technical direction issued by the EPA WACOR.

The Contractor shall adhere to the following specifications in producing deliverables under this work assignment:

1. The Contractor shall subject all written deliverables to QA/QC measures, including proofreading, grammar, readability, consistency of style, consistent formats of tables and figures, etc.

2. The Contractor shall submit all deliverables to the EPA WACOR in the form of hard copy and electronic files in both WORD and PDF formats unless otherwise specified by the EPA WACOR.

3. The Contractor shall produce deliverables submitted on an annual, quarterly, monthly, or weekly basis in a format that is identical to formats used for these deliverables in earlier years of a study unless otherwise specified by the EPA WACOR. The EPA WACOR will provide copies of past deliverables to serve as templates for developing these periodic deliverables.

4. The Contractor shall produce hard copy deliverables on bright white bond paper that contains no more than 50% recycled stock.

5. All draft and final deliverables are subject to EPA WACOR review and approval prior to final dissemination.

6. All deliverables produced for public release shall be 508 compliant.

Routine delivery of deliverables shall be by overnight mail unless another alternative is specifically requested by the EPA WACOR. Below is a summary of deliverables and schedule for Tasks 1-8. Please note that the number of days specified for deliverables under the schedule column in the table below refers to business days.

TASK	DELIVERABLES	SCHEDULE
1	Work plan and monthly reports	As specified in Contract EP-C-14-016
2	Draft final Fish Plug Study Fish Collection and Preparation QAPP Revision 2	3 days after receipt of WACOR comments
	Final Fish Plug Study Fish Collection and Preparation QAPP Revision 2	3 days after receipt of signatures from approvers

2	2018-19 NRSA Fish Sample Preparation QAPP first draft 2018-19 NRSA fish sample preparation QAPP subsequent drafts 2018-19 NRSA fish sample preparation QAPP final	As specified in EPA WACOR written technical direction 3 days after receipt of WACOR comments 3 days after receipt of signatures from approvers
2	Fish Plug Study Sample Analysis QAPP Revision 1 review comments	5 days after receipt of draft QAPP
2	2018-19 NRSA Sample Analysis QAPP review comments on initial QAPP and any subsequent QAPP revisions (e.g., Revision 1 and Revision 2)	5 days after receipt of draft QAPP
2	Fish Plug Study selenium phase field data QC review records	8 weeks after completion of final fish sampling trip
2	2018 NRSA whole fish sample collection field data QC review records	10 weeks after completion of 2018 NRSA field season
2	Fish Plug Study mercury data file QC review comments	1 week after receipt of the data file
2	Fish Plug Study selenium data file QC review comments	1 week after receipt of the data file
2	2015 GLHHFFTS dioxin/furan statistical output file QC review comments	2 weeks after receipt of the output file
2	2010 GLHHFTS analytical QA report review comments	2 weeks after receipt of the report
2	2013-14 NRSA analytical QA report review comments	2 weeks after receipt of the report
2	2015 GLHHFFTS analytical QA report review comments	2 weeks after receipt of the report
2	Fish study documentation for the annual OW QA report	As specified in EPA WACOR written technical direction
3	Presentation, briefing, training, and program materials	As specified in EPA WACOR written technical direction
3	Meeting agendas, summaries, evaluations, etc.	As specified in EPA WACOR written technical direction

4	2018-19 NRSA draft revised human health fish sampling protocols 2018-19 NRSA final revised human health fish sampling protocols	As specified in EPA WACOR written technical direction 3 days after receipt of WACOR comments
4	Review comments on 2018-19 NRSA documents and forms	5 days after receipt of documents and 2 days after receipt of forms from WACOR
4	Whole fish sampling kits for the 2018-19 NRSA	By delivery date requested on NRSA order forms or via email requests
4	2018-19 NRSA weekly fish sampling progress reports	Wednesdays after the end of each fish sampling week
4	Draft 2018 NRSA Fish Sample Collection Master Spreadsheet Final 2018 NRSA Fish Sample Collection Master Spreadsheet	Fish sample entries added within 2 weeks of receipt of fish sampling field forms One week after receipt of WACOR comments
4	Fish Plug Study selenium phase fish sampling plans	One week prior to each fish sampling trip
4	Fish Plug Study selenium phase sampling kits	One week prior to each fish sampling trip
4	Fish Plug Study selenium phase whole fish and plug samples	As specified in the fish sample collection QAPP
4	Draft Master Spreadsheet for the Fish Plug Study selenium phase Final Master Spreadsheet for the Fish Plug Study selenium phase	2 weeks after final fish sampling trip 1 week after receipt of WACOR comments
4	Final 2010 GLHHFTS cumulative fish sampling activity report	2 weeks after receipt of WACOR comments on draft report

4	Final 2013-14 NRSA cumulative fish sampling activity report	2 weeks after receipt of WACOR comments on draft report
4	Draft 2015 GLHHFFTS cumulative fish sampling activity report Final 2015 GLHHFFTS cumulative fish sampling activity report	As specified in EPA WACOR written technical direction 2 weeks after receipt of WACOR comments on draft report
5	Draft final Fish Plug Study selenium phase fish sample preparation SOP Final Fish Plug Study selenium phase fish sample preparation SOP	3 days after receipt of WACOR comments 3 days after receipt of WACOR comments
5	Fish Plug Study fish sample preparation QC results	As per laboratory data delivery schedule
5	Fish Plug Study fish sample preparation weekly progress reports	Tuesdays after each week of fish sample preparation
5	Fish Plug Study fillet and plug tissue sample shipments to designated analytical laboratories	Initiation of shipments as required for conformance with laboratory data delivery schedules
5	Draft 2018-19 NRSA fish sample preparation SOP Final 2018-19 NRSA final fish sample preparation SOP	As specified in EPA WACOR written technical direction 3 days after receipt of WACOR comments
5	Draft 2018-19 NRSA fish sample preparation instructions Final 2018-19 NRSA fish sample preparation instructions	One week after receipt of each set of 20 fish samples 3 days after receipt of WACOR comments
5	2018-19 NRSA fish sample preparation QC results	As per laboratory data delivery schedule
5	2018-19 NRSA fish sample preparation weekly progress reports	Tuesdays after each week of fish sample preparation

5	2018-19 NRSA fish plug sample and fillet tissue sample shipments to designated analytical laboratories	Initiation of shipments as required for conformance with laboratory data delivery schedules
6	Interim and cumulative fish study data summaries and graphics	As specified in EPA WACOR written technical direction
6	Draft Fish Plug Study statistical analysis plan review comments	1 week after receipt of WACOR comments
6	Independent review comments on the Fish Plug Study statistical analysis results and conclusions	2 weeks after receipt of results and related information from the WACOR
6	Distribution of NLFTS data CDs	Within 24 hours of receipt of data request from EPA WACOR
7	New Fish Plug Study poster and poster updates	As specified in EPA WACOR written technical direction
7	New 2015 GLHHFFTS poster	As specified in EPA WACOR written technical direction
7	Fish study web materials	As specified in EPA WACOR written technical direction
8	2010 Great Lakes Human Health Fish Fillet Tissue Study journal article draft revisions and final revision, internal and external peer review comment responses	As specified in EPA WACOR written technical direction
8	2013-14 NRSA Fish Fillet Tissue Study journal article drafts and final article, internal and external peer review comment responses	As specified in EPA WACOR written technical direction
8	Fish Plug Evaluation Study Mercury Phase journal article drafts and final article, internal and external peer review comment responses	As specified in EPA WACOR written technical direction
8	Fish Plug Evaluation Study Selenium Phase journal article drafts and final article, internal and external peer review comment responses	As specified in EPA WACOR written technical direction
8	Draft and final text and graphics for a journal article reporting 2015 GLHHFFTS PFC results	As specified in EPA WACOR written technical direction

8	Draft and final text and graphics for a journal article reporting 2015 GLHHFFTS dioxin and furan results	As specified in EPA WACOR written technical direction
8	Review comments for 2015 GLHHFFTS fatty acid journal article	As specified in EPA WACOR written technical direction
9	General technical support deliverables	As specified in EPA WACOR written technical direction

VIII. TRAVEL:

During this WA performance period, EPA anticipates Contractor long distance travel to the following events: five scientific conferences and meetings (described under **Task 3, *Activity 3***), twelve training workshops for the 2018-19 NRSA (described under **Task 3, *Activity 3***), and six fish sampling trips for the Fish Plug Evaluation Study (described under **Task 4, *Activity 2***). Staff requirements and information for estimating travel costs are provided below for these travel events. Please note that assumptions for travel locations and dates (duration) are marked with bold font.

Summary Travel Information for Five Scientific Conferences and Meetings (described under Task 3)

- 2018 American Fisheries Society Meeting
  - Location: Atlantic City, NJ
  - Dates: August 19-23 (plus 1 travel day)
  - Staff required: One Senior Fisheries Biologist to serve as a presenter

- 2018 SETAC Meeting
  - Location: Sacramento, CA
  - Dates: November 4-8 (plus 2 travel days)
  - Staff required: One Senior Fisheries Biologist to serve as a presenter

- 2019 Great Lakes Regional Meeting
  - **Assumed** Location: Chicago, IL
  - **Assumed** Duration: 3 days (plus 2 travel days)
  - Staff required: One Senior Fisheries Biologist to serve as a presenter

- 2019 National Water Quality Monitoring Conference
  - **Assumed** Location: Denver, CO
  - **Assumed** Duration: 4 days (plus 2 travel days)
  - Staff required: One Senior Fisheries Biologist and an additional fish study support team member to serve as presenters

- 2019 EPA National Fish Forum
  - Assumed Location: Portland, OR
  - Assumed Duration: 3 days (plus 2 travel days)
  - Staff required: One Senior Fisheries Biologist and an additional fish study support team member to serve as presenters

Summary Travel Information for Twelve 2018-19 NRSA Fish Sampling Training Workshops (described under Task 3)

For estimating costs for each of the 12 training workshops, assume the following:

- One Trainer per workshop (see Trainer qualifications described under **Task 3**)
- **Assumed** duration of 6 days per workshop (4 days for training and 2 days for travel)
- **Assumed** locations for individual workshops as follows:
  - 2019 NRSA Train-the-Trainer workshop in Sacramento, CA during March 2019
  - Region 1 NRSA training workshop in North Chelmsford, MA during June 2019
  - Region 2 NRSA training workshop in Trenton, NJ during May 2019
  - Region 3 NRSA training workshop in Wheeling, WV during May 2019
  - Region 4 NRSA training workshop in Athens, GA during April 2019
  - Region 5 NRSA training workshop in Chicago, IL during May 2019
  - Region 6 NRSA training workshop in Dallas, TX during April 2019
  - Region 7 NRSA training workshop in Kansas City, KS during May 2019
  - Region 8 NRSA training workshop in Denver, CO during June 2019
  - Region 9 NRSA training workshop in Sacramento, CA during April 2019
  - Region 10 NRSA training workshop in Portland, OR during June 2019
  - One additional NRSA training workshop in Traverse City, MI during May 2019

EPA also anticipates that local travel to quarterly fish study team meetings will be required as described under Task 3. At a minimum, three Tetra Tech staff serving as the Work Assignment Leader/Senior Fisheries Biologist, the Fish Study Logistics Coordinator, and a designated note-taker with fish study support experience shall attend the quarterly fish study team meetings. The EPA WACOR anticipates scheduling all the fish study team meetings for one day at EPA Headquarters during the months of July 2018, October 2018, January 2019, and April 2019.

Summary Travel Information for Six Fish Sampling Trips for the Selenium Phase of the Fish Plug Evaluation Study (described under Task 4)

For estimating costs for each of the **3 Great Lakes fish sampling trips**, assume the following:

- One Contractor staff with substantial freshwater fish sampling and taxonomy experience
- Charter boat rental for 3 days
- **Assumed** duration of 5 days per trip (3 sampling days and 2 travel days)
- **Assumed** locations for individual sampling trips as follows:
  - Trip 1 to northern Lake Michigan
  - Trip 2 to Lake Erie
  - Trip 3 to Lake Ontario

For estimating costs for each of the **3 Mid-Atlantic Rivers fish sampling trips**, assume the following:

- Up to a 3-person fish sampling crew (as required to meet safety standards) with substantial fish sample collection, freshwater fish taxonomy, and boat and equipment operation experience
- **Assumed** duration of 3 days per trip (2 sampling days and 1 travel day) for Trips 4 and 5 below (to the Anacostia and Potomac Rivers), and 5 days for Trip 6 to the St. Lawrence River (3 sampling days and 2 travel days)
- **Assumed** locations for individual sampling trips as follows:
  - Trip 4 to Anacostia River locations with public access
  - Trip 5 to Potomac River locations with public access
  - Trip 6 to St. Lawrence River locations with public access

Any travel chargeable to this work assignment shall be allowable only in accordance with the limitations of FAR 31.205-43 and FAR 31.205-46, and must be approved by the EPA CL COR and EPA WACOR prior to travel taking place.

IX. PRINTING:

All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

X. CONTRACTOR IDENTIFICATION

Contractor personnel shall clearly identify corporate affiliation at the start of any meeting or training workshop. While attending EPA-sponsored meetings, conferences, symposia, etc., or while on a Government site, Contractor personnel shall wear a badge that identifies the

individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of the Agency at meetings, conferences, symposia, etc.

XI. MEETINGS, CONFERENCES, TRAINING EVENTS, AWARD CEREMONIES AND RECEPTIONS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR. The total costs for all activities related to each conference, meeting, and training event described in this work assignment (WA 4-01) shall not exceed $20,000. **All conferences, meetings, and training workshops referred to in Task 3 of the PWS (except the quarterly meetings requiring only local travel) will be planned and funded by other organizations, so the EPA WACOR will not require support for any of these events under WA 4-01 that exceeds $20,000.**

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-03

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019	Technical Support for EPA WQS
	Base Option Period Number 4	

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	3.2, 3.4, 3.5, 3.6, 3.7

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Julianne McLaughlin (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-566-2542	
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-564-3133	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2002	
	FAX Number:	

PERFORMANCE WORK STATEMENT
EPA Contract EP-C-14-016
Work Assignment 4-03

I. TITLE: Technical Support for EPA Rulemakings, Determinations and Other Water Quality Standards-Related Actions

II. WORK ASSIGNMENT CONTRACTING OFFICER REPRESENTATIVE (WACOR):

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ALTERNATE WACOR :

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III. PERFORMANCE PERIOD: July 1, 2018 through June 30, 2019

IV. LEVEL OF EFFORT: **1030 Direct Labor Hours**

V. SUPPORTS CONTRACT PWS SECTIONS: 3.2, 3.4, 3.5, 3.6. 3.7, 3.11

VI. BACKGROUND:

This Work Assignment 4-03 is essentially identical to its predecessor Work Assignment 3-03.

EPA's Office of Science and Technology (OST) is responsible for developing sound, scientifically defensible water quality standards, criteria, advisories, guidelines, limitations and standards guidelines under the Clean Water Act (CWA). Water quality standards define the water quality goals of a water body by designating uses, setting criteria to protect those uses and establishing provisions to protect water bodies from pollutants.

Section 303 of the CWA requires states and authorized tribes to adopt water quality standards for waters of the United States within their jurisdictions. The CWA further requires states to submit these water quality standards for EPA approval and EPA must then take action within certain

regulatory deadlines. Section 303(c) of the CWA directs the Administrator to promulgate water quality standards to supersede state standards that have been disapproved, or in any case where the Administrator determines that a new or revised standard is needed to meet the CWA's requirements. This is known as a "Federal Promulgation" or an "Agency Rulemaking". The CWA also gives EPA the authority to act on existing state water quality standards that have been previously approved by EPA if EPA identifies a provision(s) that is not consistent with the CWA. This is known as an "Administrator Finding", "Administrator Determination" or "CWA Section 303(c)(4)(B) Determination". EPA always conducts in-depth and issue-specific technical research and analysis in order to reach its conclusions.

This Work Assignment shall perform a variety of specific subtasks to support the Water Quality Standards Program at EPA. The WACOR will fill in the specific details of the general description of work or documentation items through written technical direction to the Contractor. Additional background and more details regarding the Work Assignment are provided under the individual task descriptions.

VI. TASKS

TASK 1 – Kickoff Meeting

The contractor shall participate in a Work Assignment (WA) kickoff meeting with EPA staff via conference call within five days of WA award. The purpose of the kickoff meeting is to discuss and clarify expectations, answer any questions, and identify and resolve any potential problems. The purpose of the kickoff meeting is not to change any terms and conditions of the WA. Any change to the WA that results from the kickoff meeting shall be made only by a contract modification (Work Assignment Amendment) executed by the Contracting Officer. Kickoff meeting participants shall not take action that in any way alters the WA. The contractor shall provide notes from the Kickoff meeting to the Work Assignment COR (WA-COR) within two business days.

Given that the specific details for subtasks within each task will be provided through future written technical direction from the EPA WA-COR, the kick-off meeting will include discussion of the key staff who could be involved in the individual tasks, any specific expertise they could provide to the types of work described in each task plus examples of specific projects that are similar in topic area and scope to those described under each task. Additional details on the technical expertise required for each task are provided under the individual task descriptions.

TASK 2 – Quality Assurance

Subtasks in this WA may require the use of primary and/or secondary data and shall be implemented in accordance with an approved quality assurance project plan (QAPP). As the tasks for this WA are essentially the same as those in WA 3-03, the contractor shall use the approved QAPP developed for that WA and shall assure that the quality of the primary or secondary data and analyses are accurate and correct. If needed, the contractor shall hold a

conference call with the EPA WA-COR prior to submission of the QAPP to discuss any issues needing clarification.

For each final deliverable, the contractor shall provide a statement that all QA procedures were followed, and a statement describing any needed changes to those procedures, if necessary. The contractor shall also prepare a quality assurance documentation report when all work is finished under this WA.

TASK 3 – Provide Technical Support

Background: Given the complexity of water quality standards development and implementation and the Agency's associated regulatory and often court-imposed deadlines, EPA often finds itself in the position of quickly needing to conduct complex analyses in order to promulgate federal water quality standards, make an Administrator determination, or take some other water quality standards-related action. Data collection and analysis is a necessary component of the technical preparation for such actions. In quick order, the extent of a problem needs to be understood, including waters affected, available monitoring data, impairment information, Total Maximum Daily Loads (TMDLs), permits, applicable state standards and state requirements in place for point source and nonpoint source control, for example.

Examples of past federal promulgations include EPA's 2003 promulgation in Kansas of water quality standards for 1,288 lakes and streams, EPA's establishment of federal bacteria criteria in 2004 for those states and territories with Great Lakes or coastal recreational waters that had not yet adopted standards in accordance with the Beach Act of 2000, and EPA's recent Florida Inland Waters Rule. Examples of past Agency determinations include EPA's 2009 decision that new or revised water quality standards were needed for the area of the Mississippi River around St. Louis and EPA's 2009 determination that new or revised nutrient standards were needed in the state of Florida. Other water quality standards-related actions have included complex state approvals or disapprovals, or responding to a water quality standards-related petition, notice of intended action (NOI) or lawsuit. In all of the aforementioned cases, EPA conducted in-depth and issue-specific technical research and analysis in order to reach its final conclusions.

Task Description: The contractor shall provide the kind of technical support described above, over the remainder of the 2018 calendar year and into 2019. The technical support shall assist the efforts of EPA Headquarters, EPA Regions, States or Tribes as outlined in the following subtasks:

Subtask A. Collect and summarize information.

A.1 From data sources on water quality standards, recreational uses, permits, effluent monitoring data, ambient monitoring data, effluent guidelines, 303D listings, TMDL development, industry and municipality profile information and other data as appropriate.

A.2 Field sampling. Provide technical support for performing field sampling for water quality data, flow conditions, water levels, velocity and physical conditions of a water body.

Subtask B: Provide critical review and summary reports of water quality criteria, standards, TMDLs and permits (including any related support documentation) developed, revised or modified by EPA, States/Tribes;

Subtask C: Conduct limited literature searches, reviews and summaries to inform or assist in developing, revising or taking action on water quality criteria or standards by EPA, States, or Tribes; often with quick response required;

Subtask D: Prepare analyses of data and information to inform or assist in developing, revising or taking action on water quality criteria or standards by EPA, States/Tribes; often with quick response required;

Subtask E: Conduct critical review and summary of reports, publications or other analyses developed by State/Tribes, the regulated community, non-governmental organizations, or other third parties focused on water quality criteria, standards and permits; often with quick response required.

Subtask F: Provide technical and analytical support regarding the data and other information in the WQS Information and Tracking System, including its components such as WATA and the WQS Repository.

The EPA WA-COR will provide the specific details of the technical support needed through written technical direction to the contractor.

Technical Expertise Required:

The key technical individual(s) who work on this work assignment shall have an expert working knowledge of EPA's water quality standards program, including EPA's existing 304(a) criteria
(for protection of aquatic life and human health). Furthermore, the key technical individual(s) must have working knowledge of the various additional guidances and approaches EPA has developed for modifying/implementing the water quality standards program, as well as experience and/or working knowledge of the following websites and databases:

- EPA's WQS Repository: www.epa.gov/waterscience/standards/wqslibrary/
- The Antidegradation Clearinghouse: http://www.epa.gov/waterscience/antideg/antidegclear/index.html
- IRIS: http://epa.gov/iris/
- STORET: http://www.epa.gov/storet/
- USGS Monitoring Data Websites
- Dflow: http://www.epa.gov/waterscience/models/dflow/
- CORMIX for Mixing Zones: http://www.epa.gov/waterscience/models/cormix.html

- Permits Compliance System (PCS) Database and the ICIS-NPDES (Integrated Compliance Information System – National Pollutant Discharge Elimination System):
- http://www.epa.gov/enviro/facts/pcs-icis/search.html
- State-specific water quality standards, permits and 303(d) listing and TMDL websites/databases
- GIS systems in order to spatially lay out information on mixing zones, permittees, environmental justice, land use, etc.
- Discharge Monitoring Report (DMR) Pollutant Loading Tool: www.epa.gov/pollutantdischarges

TASK 4 – Provide Summary Reports and Presentations

Background: Pre-decisional processes require the collection and analysis of in-depth and issue-specific technical research and analysis. The information is often needed in a summarized format to give progress updates to internal management.

Task Description: The contractor shall provide a variety of summary materials for the purpose of presenting information to and briefing internal management. Given the case-specific nature of these requests, additional details/information regarding what these deliverables will be provided via written technical direction.

Subtask A. Fact Sheets and White Papers
Subtask B. Visual Media
Subtask C. Case Studies

TASK 5 – Information Quality Review

The contractor shall prepare and update as necessary the Information Quality Guidelines Checklist for Influential Information, along with supporting information. This checklist is described by the Office of Water Information Quality Guidelines: Pre-Dissemination Review Guidance and Checklists, Attachment B.

TASK 6 - Assist with Communication and Outreach

The contractor shall assist with efforts to communicate information about water quality standards-related actions to the public and key stakeholders. This includes development of communication strategies that identify target audiences, messages to reach those audiences, and products appropriate for each audience, in addition to identifying distribution mechanisms, and evaluating outreach efforts.

VII. SCHEDULE OF BENCHMARKS & DELIVERABLES:

Task/ Subtask	DELIVERABLE	Schedule

1	**Kickoff Meeting Notes**	Due two business days after Kickoff Meeting
2	**QAPP** **Final Quality Assurance Documentation Report**	Due within five business days after Kickoff Meeting On or before June 30, 2019
3.A.1	**Information Collection**	Within 7 days of written technical direction
3.A.2	**Field Sampling**	Within 14 days of written technical direction
3.B	**Critical Review, Summary Report of State/EPA Information**	Due as requested by the EPA WA-COR via written technical direction
3.C	**Literature Searches, Reviews, Summaries**	Due as requested by the EPA WA-COR via written technical direction
3.D	**Data/Information Analyses**	Due as requested by the EPA WA-COR via written technical direction
3.E	**Critical Review, Summary Report of 3rd Party Information**	Due as requested by the EPA WA-COR via written technical direction
3.F	**Technical and Analytical Work Supporting WQSITS, WATA, and the WQS Repository**	Due as requested by the EPA WA-COR via written technical direction
4	**Presentations and Follow-up Materials**	Due as requested by the EPA WA-COR via written technical direction
5	**Information Quality Guidelines Checklist**	Due as requested by the EPA WA-COR via written technical direction
6	**Communication Strategies**	Due as requested by the EPA WA-COR via written technical direction

Draft written deliverable(s) for review by the EPA WA-COR shall be prepared in accordance with the written Technical Direction provided by the WACOR and submitted in accordance with the Work Assignment Schedule of Benchmarks and Deliverables.

Final written deliverable(s) shall be prepared in accordance with the written Technical Direction provided by the EPA WA-COR and submitted in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables, after any written comments are received from the EPA WA-COR. All final deliverables will be compliant, as appropriate, with section 508 of the Rehabilitation Act of 1973, as amended.

TRAVEL: Some travel is anticipated under this work assignment. For cost estimate purposes, assume three one-day trips for one person from contractor location to any site nationwide (use trip to Florida to generate estimate) as identified by the EPA WA-COR, with site visit schedules arranged to minimize travel time. All travel under this WA shall be in compliance with contract requirements.

PRINTING

All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

CONTRACTOR IDENTIFICATION

Contractor personnel shall clearly identify corporate affiliation at the start of any meeting or training workshop. While attending EPA-sponsored meetings, conferences, symposia, etc., or while on a Government site, Contractor personnel shall wear a badge that identifies the individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of the Agency meetings, conferences, symposia, etc.

MEETINGS, CONFERENCES, TRANINING EVENTS, AWARD CEREMONIES AND RECEPTIONS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR.

VII. ATTACHMENTS:

Attachment A:	General WA Background Information
Attachment B:	Office of Water Information Quality Guidelines: Pre-Dissemination Review Guidance and Checklists

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-08

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Selenium Implementation

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	Section 3.4

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Julianne McLaughlin (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-2542 FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2002 FAX Number:

PERFORMANCE WORK STATEMENT

Tetra tech Contract EP-C-14-016

Work Assignment 4-08

TITLE: Selenium Criterion Implementation and Technical Support

EPA WORK ASSIGNMNENT:
Contracting Officer Representative (WACOR)

Julianne McLaughlin
Standards and Health Protection Division (4305T)
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ALTERNATE WACOR:

Karen Kesler
Standards and Health Protection Div. (4305T)
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Fax: 202-566-0409
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PWS SECTION: 3.4

PERIOD OF PERFORMANCE: July 1, 2018 through June 30, 2019

BACKGROUND:

The purpose of this work assignment is to provide support for the National 304(a) selenium criterion implementation documents by (a) assisting the Agency in compiling and reviewing various implementation products for the final selenium criterion, (b) assisting in the development of streamlined and "one voice" final selenium implementation documents, (c) providing technical support for the development and review of implementation products, and (d) assisting with science based questions on dynamics of selenium in receiving waters and fish sampling techniques, as well as other science based issues that may present themselves in the process of developing implementation materials.

Some of the work for this project has already been performed in conjunction with work assignment 0-08, 1-08, and 2-08. The purpose of this work assignment is to complete final versions of the selenium technical support documents.

QUALITY ASSURANCE:

The contractor shall have an approved Quality Management Plan (QMP) that conforms with EPA Requirements for Quality Management Plans (EPA/240/B-01/002) which can be found at:

http://www.epa.gov/quality/qs-docs/r2-final.pdf. The QMP should include a discussion of how the contractor shall address existing data and coordinate QA/QC with subcontractors. The contractor shall also ensure that all activities in this WA conform to the Quality Assurance Project Plan (QAPP) the contractor shall review or revise in Task 2. Because this work assignment may use existing data, the QAPP shall be consistent with Chapter 3 of "Guidance for Quality Assurance Project Plans EPA QA/G-5" downloaded from the EPA website at: http://www.epa.gov/quality/qs-docs/g5-final.pdf. Quality issues and corrective actions shall be included in the monthly progress reports as specified in Task 1. Upon completion of the project, the contractor shall complete the Information Quality Guidelines Checklist (Attachment A), and shall provide a supporting statement for each item in the list.

Task 1. Develop work plan and monthly progress reports

The contractor shall prepare a work plan and cost estimate for the tasks in this work assignment including proposed level of effort, budget, schedule of tasks, and a timeline for completion of the tasks.

The contractor shall also provide monthly progress and financial reports. The monthly reports shall include a table with the invoice LOE and costs broken out by the tasks in this work assignment. The monthly reports shall also include a separate QA section indicating if significant QA issues were identified and how they are being resolved.

Deliverables: Work plan and monthly progress reports.
Due Date: Work plan within fifteen calendar days after receipt of the work assignment. Monthly progress reports as required under the general terms of the contract.

Task 2: Quality Assurance Project Plan (QAPP)

The Office of Water quality management plan states that a QAPP is a living document that shall be kept current throughout the life of the project by updating the original text or through addition of appendices that are reflected in an updated table of contents and revision history page. The contractor shall review the QAPP that was developed during the previous work assignment period focusing on those quality assurance elements relevant to the tasks in this work assignment and determine whether any revisions are necessary. If revisions are necessary, the revised QAPP shall conform to EPA guidance specified in Chapter 3 of "Guidance for Quality Assurance Project Plans EPA QA/G-5" downloaded from the EPA website at: http://www.epa.gov/quality/qs-docs/g5-final.pdf and the QAPP review checklist provided in Attachment B. The contractor shall also complete the QAPP review checklist in Attachment B using the guidance provided in Attachment C. If no revisions to the QAPP are necessary, the contractor shall provide written notification to the WACOR that the QAPP from the previous work assignment shall be utilized for this work assignment. If revisions are necessary, then the contractor shall provide a revised QAPP to the WACOR. The EPA WACOR will provide additional written technical direction and guidance materials as needed. The revised QAPP (including appendices) shall be subject to the same approvals as the original QAPP.

Deliverables: Notification of necessity of revision or revised QAPP

Due Date: Notification or Draft QAPP within fifteen calendar days after receipt of approved work assignment, final QAPP within seven calendar days after receipt of EPA feedback on draft QAPP.

Task 3: Technical support for informational materials and science-based questions related to the implementation of EPA's tissue-based selenium criterion.

Upon written technical direction from the EPA WACOR, the contractor shall continue to assist EPA in revising informational materials and answering science-based questions to help states, tribes, and the public implement EPA's tissue-based aquatic life criterion for selenium. If necessary, the contractor shall also revise the informational materials developed during the previous work assignment period to conform with the revised QAPP. The primary implementation issue and science-based questions shall be related to how to monitor and assess the concentration of selenium in fish tissue for compliance with the tissue-based criterion in a scientifically defensible manner. The contractor shall provide expert scientific recommendations for monitoring and assessing the concentration of selenium in fish tissues with respect to the criterion. The contractor shall also assist EPA with science-based questions related to other aspects of selenium implementation. The contractor shall review the relevant scientific literature and shall provide expert scientific recommendations on science-based implementation questions provided by the EPA WACOR. The contractor shall provide support to EPA in addressing comments received during the public comment period, regional review, and managerial review. The contractor shall work closely with the EPA WACOR in an iterative process via telephone, conference calls, and written technical direction to develop any new text material. EPA will provide written technical direction on any aspect of the project at any time upon request of the contractor.

For the purposes of estimating cost, the contractor shall expect 2 science-based questions requiring responses that are no more than 10 pages in length and shall require 80 hours of work. EPA estimates this process will require approximately one draft and a final version for EPA review and feedback.

Deliverables: Written responses or text edits drafted to address public comments or EPA science-based questions related to any of the four implementation documents.
Due Date: Written responses or text edits drafted to address public comments or EPA science-based questions within fifteen calendar days after receipt of the EPA WACOR's feedback and written technical direction.

Task 4: Ancillary and clerical support

The contractor shall provide EPA with technical and clerical support to refine several independent documents into a group of related informational documents suitable for dissemination to the public. EPA is developing and revising four documents that will provide implementation information for EPA's tissue-based aquatic life criterion for selenium. The contractor shall assist EPA in revising all documents to "speak with one voice." This task may require the contractor to perform technical editing, draft executive summaries and dissemination materials, obtain permission to use copyrighted material, and perform other technical and clerical

tasks. In addition, the contractor shall also provide support in addressing formatting and grammatical needs, including assuring that the final documents are 508 compliant. The contractor shall work closely with the EPA WACOR in an iterative process via telephone, conference calls, and written technical direction to develop these materials. EPA will provide written technical direction on any aspect of the project at any time upon request of the contractor. EPA estimates this process shall require approximately two drafts and a final version for EPA review and feedback.

Deliverables: Revised 508 compliant selenium criterion implementation documents (4 documents) in a word document and pdf format.
Due Date: Within fifteen calendar days after receipt of the EPA WACOR's feedback.

SCHEDULE AND DELIVERABLES:

Task	Deliverables	Due Date
1	Work plan and cost estimate.	Within fifteen calendar days after receipt of the work assignment.
2	Notification or revised QAPP.	Notification or Draft QAPP within fifteen calendar days after receipt of approved work assignment, final QAPP within seven calendar days after receipt of EPA WACOR feedback on draft QAPP via written technical direction.
3	Written responses to questions or text edits to documents.	Within fifteen days after receipt of EPA WACOR feedback via written technical direction.
4	Revised group of documents.	Within fifteen calendar days after receipt of EPA WACOR feedback via written technical direction.

TRAVEL:
No travel is anticipated for this work assignment.

CONTRACTOR IDENTIFICATION:
Contractor personnel shall clearly identify corporate affiliation at the start of any meeting. While attending EPA-sponsored meetings, conferences, symposia, etc., or while on a Government site, Contractor personnel shall wear a badge that identifies the individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of EPA.

SPECIAL CONDITIONS:
The contractor shall provide all materials written under these tasks to the EPA WAM in electronic form. Electronic versions shall be in Microsoft Word, Microsoft Excel, and/or PDF and 508 compliant.

CONFIDENTIALITY:
Some of the work assigned under these tasks may include drafting, editing, and reviewing sensitive program and organizational information. The contractor shall not discuss the contents

of any conference or meeting discussions with anyone that did not participate in those discussions.

NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS WORK ASSIGNMENT:

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherently governmental nature such as the following:

(1) Formulation of EPA policy
(2) Selection of EPA priorities
(3) Development of EPA regulations

If the contractor receives any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the CO, Contract Level COR, and EPA WACOR.

Draft written deliverable(s) for review by the EPA WA-COR shall be prepared in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables.

Final written deliverable(s) shall be furnished in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables, after written comments are received from the EPA WA-COR.

The contractor shall ensure that all draft documents are well written and reasonably free of spelling and grammatical errors. The contractor shall incorporate WACOR comments into draft documents. All drafts and final reports shall be approved by the WACOR. The contractor will generally provide draft and final deliverables to EPA in Microsoft Word, Excel, and PowerPoint formats. However, the contractor shall first discuss the computer file formats with the WACOR prior to file preparation. Documents that the WACOR identifies for posting on an EPA webpage shall be Section 508 compliant.

Printing: All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

GREEN MEETINGS AND CONFERENCES

The contractor shall follow the provision of EPA prescription 1523.703-1, *Acquisition of environmentally preferable meeting and conference services (May 2007),* for the use of off-site commercial facilities for an EPA event, whether the event is a meeting, conference, training session, or other purpose. Environmental preferability is defined at FAR 2.101, and shall be used when soliciting quotes or offers for meeting/conference services on behalf of the Agency.

No single event under this WA is anticipated to exceed $20,000. The contractor shall immediately notify the EPA Contracting Officer, PO and WACOR of any anticipated event

involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur $20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the Contracting Officer.

Attachment A: Information Quality Guidelines Checklist

Office of Water
Information Quality Guidelines Checklist for
Influential Information

Influential Information has or will have a clear and substantial impact on important public policies or private sector decisions. (Includes OMB economically significant actions, peer reviewed documents, top Agency policy documents, and other actions on a case-by-case basis.)

- ☐ The information to be disseminated is covered under The EPA IQG Guidelines.
- ☐ The information is in compliance with EPA's Quality System and other related policies.
- ☐ The information is in compliance with Office of Water's Quality Management Plan.
- ☐ The information is consistent with the OMB definition of "quality," meaning the information has a high level of objectivity, utility, and integrity.
  - ☐ Objectivity: information is presented in an accurate, clear, complete, and unbiased manner, and as a matter of substance, is accurate, reliable, and unbiased.
  - ☐ Integrity: the information cannot be compromised through corruption or falsification because it is secure from unauthorized access or revision.
  - ☐ Utility: the information is useful to the intended users.
- ☐ The information meets "reproducibility" standard. The information and its accompanying documentation has a higher degree of transparency regarding the following:
  - ☐ The source of the data used
  - ☐ The various assumptions employed
  - ☐ The analytic methods applied
  - ☐ The statistical procedures employed

Division Director's Signature & Date

IQG Officer for OW Signature & Date
(Officer signature is not needed for OGWDW staff)

**If your information does not comply with any of these items, please attach brief explanation of any omissions. Please forward a copy of this document to your office's Quality Assurance Officer.

Attachment B: Project-Specific Quality Assurance Project Plan (QAPP) Checklist

QAPP Element	Page(s)	Explanatory Comments
A1. Title & Approval Sheet		
Project title		
Organization's name		
Effective date and/or version identifier		
Dated signature of Organization's project manager		
Dated signature of Organization's QA manager		
Other signatures, as needed (e.g., Project Officer, QA Coordinator)		
Revision History		
A2. Table of Contents		
Includes sections, figures, tables, references, and appendices		
Document control information indicated (when required by the EPA Project Manager and QA Manager)		
A3. Distribution List		
Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization		
A4. Problem Definition/Background		
Clearly states problem to be resolved, decision to be made, or hypothesis to be tested		
Identifies project objectives or goals		
Historical & background information		
Cites applicable technical, regulatory, or program-specific quality standards, criteria, or objectives		
A5. Project/Task Description		
Describes data to be obtained/ measurements to be made and how this will be accomplished		
Notes special personnel or equipment requirements		
Provides work schedule		

QAPP Element	Page(s)	Explanatory Comments
A6. Project/Task Organization		
Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.) and contact info.		
Organization chart shows lines of authority & reporting responsibilities		
Project QA manager position indicates independence from unit collecting/using data		
A7. Overall Quality Objectives & Criteria		
States overall quality objectives and limits needed to support the project goals and objectives cited in A4		
A8. Special Training Requirements/ Certifications		
Identifies specialized skills, training or certification requirements		
Discusses how this training will be provided/the necessary skills will be assured and documented		
A9. Project-level Documents & Records		
Describes process for distributing the approved QAPP and other planning documents (and updates) to staff		
Identifies final work products that will result from the project		
Describes the process for developing, reviewing, approving, and disseminating the final work products and individuals responsible for these processes		
B1. Data Needs		
Detailed list/description of the specific data elements needed to support project goals		

QAPP Element	Page(s)	Explanatory Comments
Description of the scope of the data elements that you need (e.g., data supporting specific treatment options vs. the full range of options, data supporting the entire country vs. a specific geographic region)		
If project includes development or update of a project database, QAPP identifies and defines each database field		
B2. Potential Data Sources		
Identifies and describes potential sources of the existing data needed (e.g., photographs, topographical maps, facility or state files, census data, meteorological data, publications, etc.) and the rationale for their use		
If literature searches are used, describes the search engines that will be used and key search terms		
If databases or models will be used, describe the database (or model) in terms of who developed it and operates it and the type of data it contains		
For other potential sources, describe the potential sources & rationale for considering or using each one		
B3. Criteria for Selecting Data Sources		
Identifies each criterion that will be used to determine if the candidate data sources listed in B2 will meet your needs, and how each criterion is defined. (Criteria vary by project; examples include reliability, age, applicability, quantity, format, and others)		
Explains rating system used to evaluate source against each criterion		

QAPP Element	Page(s)	Explanatory Comments
B4. Data Value Selection Approach		
For data sources that meet the criteria identified in B3: Describes the criteria and procedures that will be used to determine which value(s) identified in the acceptable sources are most appropriate for use in the project		
For data that do not meet these pre-established criteria but are the only data available, explains how the decision to use such data will be made and documented		
B5. Resolving Data Gaps		
Describes the process for identifying and addressing data gaps that still exist after candidate data sources have been evaluated and appropriate data values have been identified		
Describes the process that will be used to address any new data needs revealed during the data gathering process (i.e., additional data elements not previously considered)		
B6. Data Gathering Documentation and Records		
Describes how results of the source selection and the data value selection will be documented, including any sources or values that were rejected and the rationale for not using them		
For data that are deemed acceptable and that will be used, explains how each data element will be associated to its original source citation (i.e., bibliographic information, telephone contact reports, email messages, etc.)		

QAPP Element	Page(s)	Explanatory Comments
C1. Standardization of Data Elements		
Describes the process to ensure that units and other key measures are captured and standardized (or otherwise made comparable) in the database		
If the project requires that all fields be standardized to a single set of units (e.g., US dollars for economic data, µg/L for chemical data), identifies the standard units that will be required for each data element		
Identifies the procedures for converting data reported in other units to the standardized units, including any rounding or truncating procedures, and procedures for ensuring these conversions are performed correctly		
If standardization of data elements is not needed, explains the process for ensuring that data presented in varying units are comparable enough for use in the project and that project staff members and other data users will be able to readily identify differences in units		
C2. Data Entry		
Explains the process for manually entering selected data into the project database, who will be responsible for such data entry, and the QC strategies that will be used to ensure that the database accurately and completely captures the data as presented in the original source		

QAPP Element	Page(s)	Explanatory Comments
C3. Merging or Uploading Electronic Data from Existing Sources		
If data are available electronically and will be uploaded or merged into the project database: describes the procedures that will be followed to ensure that errors are not introduced during the upload/merge process and that the final database reflects the original dataset(s)		
C4. Data Review		
Describes the process for ensuring that the data have been recorded, transmitted, and processed correctly		
C5. Data Storage and Manipulation		
Describes how the existing data will be stored		
Describes who will be responsible for access to and maintenance of the stored data		
Describes how the existing data will be incorporated with other project data to support the project goal/decision to be made		
Describes the QC strategies that will be employed to ensure that the integrity of the data is not compromised during data storage, access/retrieval, updates, or other manipulation		
D1. Data Quality Verification and Data Quality Reporting		
Describes the process for verifying that the final set of data meets the overall criteria originally specified for the project		
Describes how these determinations will be documented and reported		

QAPP Element	Page(s)	Explanatory Comments
For data that don't meet the pre-established specifications, explains the process for determining if they are usable and how such decisions will be documented		
D2. Use/Analysis of the Existing Data		
Provides details regarding the exact means in which the data will be used to meet project objectives • Includes an explanation or list of the information to be calculated and the data elements that will be used to make those calculations • Includes applicable calculations and equations (if known) or explanations of how they will be developed • Includes plans for excluding outliers		
Describes activities that will be used to ensure the data analyses are being implemented as specified and will support project objectives • Explains procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting and implementing such changes		
D3. Final Verification of Data Analysis and Reconciliation with User Requirements		
Describes the process for reviewing the final work product to ensure that the work was generated in accordance with the QAPP, and that the work product addresses the overall project goals and objectives		
Describes how the results of this assessment will be documented		

QAPP Element	Page(s)	Explanatory Comments
Describes how any limitations of the data or data analyses that were used to prepare the final work product will be documented and communicated		

Attachment C: Elements of a QAPP for existing data projects

A1, Title and Approval (Traditional QAPP Element A1)

Identifies key project officials and documents their approval of the QAPP. Use a short, descriptive title with key words that will help establish the relevance of the project to future searchers. May either use a separate title and approval page or include approval lines on the title page. If using a separate title page, include the project/grant/contract identifier on the title page; if using a single page for both the title and approvals, include the project/grant/contract identifier in the title itself. Include a Revision History page that lists the date, number, and a brief description of each revision.

A2, Table of Contents (Traditional QAPP Element A2)

Helps reviewers and users quickly locate different information within the QAPP. Identify each section and the page number where those sections can be found. List all attachments and appendices. Tables and figures also should be identified in the Table of Contents for long QAPPs (e.g., more than 25 pages). SOPs may be included as attachments or appendices to the QAPP. If SOPs or other data gathering, analysis, or evaluation protocols are not documented in, or attached to the QAPP, they must be readily available to the project team and QAPP reviewers through some other means (e.g., via a website, publicly accessible document, shared network).

A3, Distribution List (Traditional QAPP Element A3)

Names and affiliation of key project personnel responsible for project implementation and/or funding, and who should have the QAPP

Can include placeholders for project roles that have not yet been filled.

A4, Problem Definition & Background (Traditional QAPP Element A5)

Background information and statement of specific problem to be solved, decision to be made, or outcome to be achieved

Describe your project goal and project objectives. Note that identifying a project goal (or "purpose") is different than identifying your project objectives. A project goal provides the answer to the general question "Why am I doing this?" In contrast, project objectives are specific tasks that must be addressed in order to fulfill the project goal.

Example text: Project Goal: Determine if effluent guidelines for X Industrial Category need to be revised. Project Objectives: Identify treatment systems currently in use by the industry, determine if other treatment techniques are available, characterize current pollutant loads from the industry, etc... Note: By clearly defining project objectives, you are laying the ground work for identifying the types of data you need to collect.

A5, Project/ Task Description (Traditional QAPP Element A6)

Summary of work to be performed and products, project schedule, maps, tables, etc., showing locations

This should be a brief description of the project, and should summarize what kind of data you will be gathering, where and how you will obtain this data, your schedule (in terms of significant milestones). In some projects, it may be helpful to include general maps of the area of interest. It is not necessary to include project budgets in the QAPP, although it may be helpful to note if the

design was constrained by project budgets and/or schedules. Avoid pasting work plan (deliverables) schedules in this section; instead, summarize major milestones/ overall schedules, but clearly delineating when technical aspects of each phase of the environmental data operations will begin and end. Don't create excessive redundancy by including extensive detail here; details are addressed elsewhere. QAPP length is not important; QAPP substance is.

Example text: EPA and its support contractor will gather existing data from a variety of sources in order to develop technical and economic profiles of the Airport Deicing Industry. Data to be gathered includes information about: airport sizes and types; geographic areas in which deicing operations are performed; deicing processes (e.g., types of operations, chemicals used in deicing fluids, climatic influences on deicing operations); toxicity of deicing fluids or chemicals used in the fluids; waste management strategies (e.g., containment and treatment of deicing fluids); pollution prevention techniques (e.g., recycling deicing fluids, techniques for use of less harmful chemicals or lower volumes of deicing fluids); environmental impacts of airport deicing; pollutant loadings; industry trends in use, containment, and treatment of deicing fluids; and financial information (ownership, management, accounting, potential cost impacts of regulation). The project team will examine a variety of potential sources for such information.

Such sources may include: EPA databases (e.g., the Permit Compliance System, Toxic Release Inventory, STORET); other EPA offices that have collected data from this industry or data pertaining to pollutants discharged by this industry; State, local and other federal agencies; and other organizations that may be identified during the course of the data identification and collection process (e.g., federal agencies in other countries that are responsible for air transportation and air transport associations). Data gathering will begin immediately upon approval of this QAPP and continue throughout fiscal year XXXX.

A6, Project/ Task Organization (Traditional QAPP Element A4)

Identifies individuals involved with major aspects or phases of the project and their project responsibilities

Include roles and responsibilities of all significant project participants, their contact information, and their respective organizations. (Note "role" is different from "responsibility." Role refers to a person's position on the project, whereas responsibility refers to the duties assigned to that role.) Include a project organization chart that visually shows the hierarchy, lines of communication and lines of authority among various groups. It is useful to provide a general chart showing relationships among various organization followed by separate charts that show the details for each organization. No need to include each and every technical staff member who will support the project, but make an effort to include each role (e.g., statistician, data analyst).

A7, Overall Quality Objectives and Criteria (Traditional QAPP Element A7)

Overall quality objectives for the project and the performance criteria to achieve those objectives

Focus your discussion on the overall quality needed to support the project goals and objectives you described in A5. (Specific criteria used for individual data elements will be addressed in subsequent sections). EPA's Information Quality Guidelines can be used to help determine the level of quality needed for the intended use of the data.

A8, Special Training and Certifications (Traditional QAPP Element A8)

Any specialized training or certifications needed by personnel; plans for providing, documenting, and assuring this training

Include specialized skills, training or certification requirements only (e.g., security clearance, CBI training) and plans for ensuring and documenting that these training requirements are met. For existing data projects, identify specialized expertise needed to evaluate the relevance and appropriateness of the existing data to your project needs. (In a primary data gathering study, you have the opportunity to design the study to collect representative samples of interest. To do so, you bring appropriate experts into the design, e.g., engineers, hydrogeologists, fisheries biologists, etc. The same is true for existing data, except that you need their expertise to evaluate the data that was already collected and determine if it meets your needs.) It is generally not necessary include non-specialized training or skills (e.g., chemistry degree, field sampling experience).
Example scenario: A project team is interested in studying the health of juvenile fish in the Colorado River. A literature search reveals a study on Colorado River Cutthroats. The paper was published the previous year in a peer reviewed journal, and it indicates that the data were fully validated. The project team considers it to be directly relevant to their needs because it involves a native species in the river, is recent data, relies on validated data, and was peer reviewed. However, the team never consulted a fisheries expert, who would have pointed out that the study targeted fish of harvestable size and weight, which are adults, not juveniles. In this case, the QAPP might state that someone with fisheries expertise is necessary for this project and has been identified (or describes the plan for obtaining this necessary skill set).

A9, Project-level Documentation and Records (Traditional QAPP Element A9)

Description of process for distributing approved QAPP and other planning documents to staff, a list of final work products that will result from the project (e.g., final report, QA report, Technical Development Document, project database, proposed regulation), a description of the process and individuals for developing, reviewing, approving, and disseminating those work products.

Explain how all project planning documents and records (e.g., the QAPP, SOPs, required forms or checklists) will be managed. This includes how they will be stored and made available to staff. Explain how updates will be implemented and distributed. Identify the final work products that will be produced from the project and explain who will be responsible for developing, reviewing, and approving the products. If they will be disseminated to the public, explain the method that will be used and the processes that will be employed to ensure it is ready for such dissemination. Focus on high- level project planning documents and records and on final work products. Day-to-day recordkeeping and documentation is addressed elsewhere in the QAPP.

B1, Data Needs (New/Modified QAPP Element)

Detailed description of the existing data needed to fulfill the project goals.

In the Project/Task Description above, you *summarized* the kind of data you will be gathering. In this section, you will provide a *detailed* list of the specific data elements that will be needed to support the project goals. Include a description of the scope of the data elements that you need.

Example scenario: if you anticipate needing data that reflects a full range of conditions (e.g., multiple treatment options, a wide geographical range), include such details in your discussion. If your project includes the development or update of one or more project databases, identify and define each field in the database(s). The intent of this section is to ensure that all QAPP reviewers, approvers, and users understand exactly what data are needed for the project and to avoid misunderstandings about what a particular data element means. If you have already documented some or all of these fields in another source, such as a database population plan, a

data element dictionary, an SOP, etc., it is acceptable to reference that document. However, any documents referenced in the QAPP must be either readily available to all members of the project team and to QAPP reviewers and approvers, or they must be attached to the QAPP.

B2, Potential Data Sources (New/Modified QAPP Element)

Description of the potential data sources that may be used, and the rationale for considering these sources.

Potential sources of previously collected data that should be identified here may include photographs, topographical maps, background information from facility or state files, census data, meteorological data, publications, etc. If a literature search will be conducted, describe the search engines that will be used and the key words that will be searched on. If databases will be used, describe each database in terms of who developed and operates it and the type of data it contains. Define your specific search/query parameters. Similarly, describe any other potential sources of data and the rationale for considering or using them. If you plan to obtain data by contacting individuals or organizations, document these plans. Source selection is often an iterative process with projects that rely on existing data; do not forget to update the QAPP if you need to change your initial source selection strategy. The updated QAPP should describe your original process as well as your revised approach and the reasons for revising the approach.

B3, Criteria for Selecting Data Sources (New/Modified QAPP Element)

Description of the criteria that will be used to evaluate the candidate data sources, and how you define these criteria.

The criteria will vary according to your needs. Examples of possible criteria might include the reliability, applicability, age, and format of the data source, or even the quantity of data available in the candidate data course. Regardless of the criteria that you choose, explain how you define each one. Explain your rating system for each criterion (e.g., a quantitative numeric scale or a qualitative ranking scale). Example: A project team is developing a new database to provide information about potential water system contaminants. The database will include basic identifying information (e.g., chemical name, common name, CAS Registry number, chemical class,), physical characteristics (e.g., molecular weight, density, vapor point, octanol water partition coefficient), usage (e.g., predominant sources, availability, annual production, history of usage), fate/transport characteristics, etc. The database will be entirely populated with existing data from a number of sources, including: published references sources, such as the Merck Index and the CRC Handbook of Chemistry and Physics; databases from EPA, CDC, OSHA, DOE, or other federal agencies; other online databases (e.g., World Health Organization's International Program on Chemical Safety website and database), and the published literature. The team defines the "applicability" of each data source on the following characteristics: the relevance of the information to the intended use of the data in the new database (e.g., a contaminant's properties in a water matrix versus other matrices), and (2) the number of data elements for any given contaminant(s) that can be populated using the source. It then establishes a high, medium, or low ranking system, in which sources that provide five or more directly relevant data elements for a chemical are rated as "high," sources that provide two to four directly relevant data elements for a chemical are rated as "medium," sources that provide only one directly relevant data element are ranked as "low,", and sources that provide no directly relevant data elements are rates as "Not Applicable" and, therefore, excluded from further consideration.

Similarly, the team decides to define the reliability of the data based on whether the information is current and peer-reviewed, how far removed the data are from the original source, and whether the data are from a preferred and widely used source, and established a similar high/medium/low basis for ranking such data against their reliability criteria.

B5, Resolving Data Gaps (New/Modified QAPP Element)

Description of process for identifying and addressing data gaps that exist after candidate data sources have been evaluated and appropriate data values have been identified.

Projects involving the use of existing data are often cyclical in nature because it is difficult to gather all the data needed in a single step. In most cases, an initial round of data gathering yields important information, but also leaves data gaps that were not located as well as additional data needs that were not previously considered. Describe the process the project team will use to identify data and address those gaps. Also describe the process the team will use to identify new data elements that may be needed. If your processes for addressing data gaps will involve the same data source and data value selection approaches previously described, it is not necessary to repeat those in detail. Instead, refer the reader to the applicable sections and focus describing any new processes, sources, activities, or criteria that will be considered.

B6, Data Gathering Documentation and Records (New/Modified QAPP Element)

Description of processes that will be used to document the sources and data that were identified, considered and either rejected or accepted. Describe how you will document the source selection results, including any sources that you decided against and the rationale for not using that result. Failure to document your rationale for excluding data sources can lead to accusations of "cherry picking" the data. Where possible, use checklists that capture each of the applicable source/data selection criteria listed above to document your assessment of each candidate source/data element. For data that are deemed acceptable and will be used in the project, explain how you will associate each data element to its original source citation. This includes bibliographic information, telephone contact reports, email messages, etc.

Example text: The contractor will use checklists to document the results of each source and data element assessment. Examples of these checklists are provided in Figures 1 and 2. The contractor will design the project database so that the data source citations and links for each data element can be maintained within each table. The contractor also will design the database so that the entire bibliography, which represents all sources of data in the database, can be viewed and printed as a report by contractor and EPA staff. Data limitations also will be documented directly in the database with the corresponding data value. Any data determined to be of questionable quality will flagged using standardized data flags (e.g., not peer reviewed, documentation of methodology incomplete). All records will be retained throughout the duration of the contract and for X years after contract closeout. All data sources will be stored with the date the source was accessed, and respective data reports, checklists, and evaluation criteria rankings. The contractor will maintain all data that was obtained in hardcopy format in a physical filing system; an electronic filing system will be used to maintain all original electronically obtained data. Both filing systems will include the complete data source citation, date of access, method of access, and, if applicable, Internet links. Some electronic data may be in the form of a compact disk (CD), in which case, a duplicate copy of the data (CD) will be maintained in the hard copy filing system as well as the electronic filing system.

C1, Standardization of Data Elements (New/Modified QAPP Element)

Description of the process that will be used to ensure that units and other key measures are captured and standardized in the database. The units of measurement should be reported for all data sets. If project needs dictate that all be fields be standardized to a single set of units (e.g., U.S dollars for economic data, ug/L for chemical data), identify the standard units that will be required for each data element. If standardization of data elements will not be needed, explain the process for ensuring that the data presented in varying units are comparable enough for use in the project and that project staff members will be able to readily identify differences in units. When considering standard units, consider both (1) simple imperial/metric conversions (e.g., ounces to grams) and (2) whether the units all can really be converted to a common meaning. Example scenario: Some results may be reported in wet weight while others are in dry weight; these are not directly comparable without additional information. How will this be handled? Identify the procedures that will be employed to convert data reported in other units to the standardized units, including any rounding or truncating procedures, and procedures for ensuring these conversions are performed correctly. If you already described your process for ensuring comparability of units in Section B as part of your data selection criteria, you may reference that process rather than repeat it here.

C2, Data Entry (New/Modified QAPP Element)

Description of process for manually entering data obtained from existing sources. Explain the process for manually entering selected data into the project database, who will be responsible for such data entry, and the QC strategies that will be taken to ensure that database accurately and completely captures the original source data. Example text: Two data entry processes will be used for this project. A dual data entry process will be used to capture data elements that are that are presented consistently for a large body of data. For example, this process will be used to capture data obtained from industry survey responses, because the responses are all presented in the same format and are all responding to the same questions. Two clerical staff members will independently enter the designated data from each form into a data entry database created for this purpose. The Database Administrator will then run an automated comparison of the two data sets and generate an error report that identifies any discrepancies.

The Data Entry Supervisor will use this report along with the original data set to identify and implement the corrections that are needed. Once the corrections have been made, a printout of the final, corrected database will be provided to the Data Population Manager for review and approval. A copy of the original error report also will be provided so that the Data Population Manager can confirm the corrections made were appropriate. A second data entry approach will be employed for data elements that are not presented consistently, and therefore, require enough subject matter knowledge to identify the data element of interest within the source (e.g., a published journal article that describes treatment technologies). In such cases, the original data entry will be performed by junior members of our technical staff team, and the Data Population Manager will perform a QC review of 10% of the data entered into the database. When performing these QC checks, the Data Population Manager will review the selected data values against their original source to verify that data elements are being populated with the appropriate data and that the data is being transcribed accurately. Regardless of which approach is used, corrective action will be taken to correct all errors identified as well as any systemic problems revealed (e.g., multiple reviewers show an inconsistent understanding of the data value needed for a particular field, one reviewer shows consistent problems in reversing numbers).

C3, Merging or Uploading Electronic Data from Existing Sources (New/Modified QAPP Element)

Description of process for that will be used to merge or upload data from existing electronic sources into the project database and identification of those who will be responsible for doing so. If data are available electronically, and will be merged into the project database, explain the procedures that will be followed to ensure that errors are not introduced during the merging process and that the final database accurately reflects the original dataset(s).

C4, Data Review (New/Modified QAPP Element)

Description of the process for ensuring that the data have been recorded, transmitted, and processed correctly. Examples include checking data entry for transcription, calculation and reduction errors, and checking data transfers to determine if there are any deficiencies, such as missing data elements, registry errors, or shifting of data fields. If you already described your process for such reviews in Sections C2 or C3, it is not necessary to repeat the process here. Instead, you may point the reader to those sections.

C5, Data Storage and Manipulation (New/Modified QAPP Element)

Description of how the existing data will be stored, who will be responsible for access and maintenance, and how it will be incorporated with other project data. This element is used to document the hardware, software, and personnel requirements for managing and incorporating the existing data into the project, and the QC strategies that will be employed to ensure that the integrity of the data is not compromised during data storage, access/retrieval, updates, or other manipulation.

D1, Data Quality Verification and Data Quality Reporting (New/Modified QAPP Element)

Description of your process for verifying that the final set of existing data to be used for the project is sufficient to meet your project needs. Describe how you will determine if the overall data meets the criteria originally specified for the project, and how you will document and report these determinations. For data that don't meet the specifications, explain how you will determine if they are usable and how you will document the decision. Note that this differs from Criterion B5, which focused on the completeness of individual data sets gathered from given sources. Section D1 addresses the overall quality of the overall data set you have gathered/assembled. Example scenario: After reviewing all data gathered for the project, you identify some data elements that do not meet the original specifications, but are, the "best available" from the sources identified. In some cases, it may not be feasible (e.g., due to cost or schedule limitations) or possible (e.g., the data just do not exist) to obtain existing data for the data elements in question nor is it possible to collect primary data that would address these gaps. Explain how you document decisions to use such data, an d how you will include the description of the data quality limitations in the work product that results from the use of those data (e.g., directly in the project database, in the final project report, in a separate QA report).

D2, Use/Analysis of the Existing Data (New/Modified QAPP Element)

Description of how the data will be summarized or analyzed to meet the project objectives. In the "Problem Definition & Background" you described the "big picture" use of the data. In this section, you will provide details regarding exactly how you will use these data (e.g., calculations, statistics). Explain or list what you will calculate (e.g., mean, median, % removal, a curve of cost vs. flow, etc.) and the data elements that will be used to make those calculations. Include

applicable calculations and equations (if known) or explain how you will develop them. If you plan to exclude outliers, explain how you will define outliers and the basis for excluding such data. If exact methodologies that will be used to analyze the data may need to be developed or modified during the course of data analysis, explain the process by which such methodologies will be documented (e.g. via memoranda, analysis plans, email), who is responsible for reviewing/approving their use, and how the methodologies will be checked to ensure they yield the desired products. Describe the activities you will use during the data analysis stage ensure the analyses are being implemented as specified and will support the project objectives. Explain your procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting, and implementing such changes. Example scenario: Explain if and how "not detected" results will be used in calculating average concentrations, explain the specific procedures used to calculate pollutant loads, identify the production parameter(s) that will be used to calculation production normalized loads, describe how percent recycle and percent removals will be calculated, and explain how cost curves will be developed.

D3, Final Verification of Data Analysis and Reconciliation with User Requirements (New/Modified QAPP Element)

Procedures for verifying that the analysis results and work products are usable and support the needs of the project. Describe the process for reviewing the final work product to ensure that the work was generated in accordance with the QAPP, that the work product addresses the overall project goals and objectives (i.e., it provides the information needed to answer the key questions). Describe how you will evaluate whether the analysis results "make sense" in the context of the project. Explain how you will document the results of this assessment, and how you will describe and communicate any limitations of the data or the data analyses that were used to prepare the final work product.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-09

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Maintenance of WQSITS Data

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	3.5, 3.12

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 08/05/2014 To 06/30/2019		0
This Action:		877
Total:		877

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Gregory Stapleton (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-566-1028	
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-564-3133	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2002	
	FAX Number:	

PERFORMANCE WORK STATEMENT
Contract #EP-C-14-016
Work Assignment #4-09

Title:	**Maintenance of WQSITS Data**
Work Assignment COR:	Gregory Stapleton Mail Code 4303T Standards and Health Protection Division (SHPD) Office of Science and Technology (OST) Office of Water (OW) (202) 566-1028 stapleton.gregory@epa.gov
Period of Performance:	July 1, 2018 through June 30, 2019
Estimated LOE:	877 Hours

I. Background

The Water Quality Standards Information and Tracking System (WQSITS) project focuses on maintaining information to help the Water Quality Standards (WQS) Program run efficiently. This information covers both publicly-available information and EPA-only resources.

EPA's website *State-Specific Water Quality Standards Effective under the Clean Water Act* is one of the focus areas of work described here. EPA established this website – also known as "the Repository" – over a decade ago related to its commitments under the Alaska Rule. The Repository contains a page for each state, authorized tribe, and territory that identifies WQS that EPA has approved or are otherwise in effect for Clean Water Act purposes. The Repository also complements other EPA websites such as those promoting WQS for wetlands and development of nutrient WQS.

In 2015 under the OneEPA web initiative, the Repository started to evolve into a state-specific focal point for "all matters WQS". For example, a state page can now include announcements for hearings and requests for comments related to WQS promulgations. Approval letters and variance listings have also been included on state pages. Content included on each state page will continue to evolve.

The *WQS Actions Tracking Application (WATA)* is another key area of the WQSITS project. Unlike the website described above, WATA is an EPA-only tool. It helps track and manage review of WQS submissions from state and notifies key personnel of submission related events (e.g., new submissions, submission approvals, etc.); WATA also triggers updates to the Repository. WATA has been particularly useful in responding to Freedom of Information Act (FOIA) requests because it contains documents that support WQS submissions and other information.

II. TASKS consist of 2 Areas: A - Standard and Administrative, B – WQSITS Support Tasks.

A. Standard and Administrative

- ***Task 0001 – Work Plan.*** The contractor shall develop a work plan to address the tasks within this work assignment. Estimates shall be broken-down by task. Additionally, estimates shall show anticipated monthly expenditures (i.e., technical labor hours and costs).

- ***Task 0002 - Quality Assurance.*** The contractor shall update the quality assurance project plan (QAPP) for WQSITS as required by written technical direction. The QAPP describes how the contractor shall verify that information provided on the websites is accurate and correct. The QAPP also discusses how the contractor shall track efforts for assuring that materials received from EPA, other federal agencies, states, tribes, and other entities are correctly incorporated onto the websites.

  The contractor shall also prepare a quality assurance documentation report when work is finished for this work assignment. This report shall document how the contractor assured that information provided on the websites is accurate and correct.

  Finally, the contractor shall prepare (and update as necessary) the *Information Quality Guidelines Checklist for Influential Information,* along with supporting information. This checklist is described by *Office of Water Information Quality Guidelines: Pre-Dissemination Review Guidance and Checklists*; this document is attached at the end of this work assignment.

- ***Task 0003 - Progress Reports.*** The contractor shall prepare monthly progress reports. Each progress report shall concisely summarize the month's accomplishments and difficulties and anticipated activities for the next month. Each progress report shall also identify any issues that need special attention. Additionally, each monthly progress report shall summarize hours and funds expended (both for the reporting period and cumulatively) for each task described below.

B. WQSITS Support Tasks

- ***Task 0004 - Update WQSITS Maintenance Project Standard Operating Procedure.*** The *WQSITS Maintenance Project Standard Operating Procedure (SOP)* describes procedures used to keep the Repository and other information resources current. As needed, the contractor shall update the SOP as described by written technical direction from the WA-COR.

- ***Task 0005 – Maintain WQSITS Data.*** The contractor shall maintain the Repository and its supporting components as described by the WQSITS SOP described above in Task 0004.

  All content for publication on EPA's website shall be 508 compliant.

III. Other Administrative

- **Contractor Identification:** Contractor personnel shall clearly identify corporate affiliation at the start of any meeting. While attending EPA-sponsored meetings, conferences, symposia, etc. or while on a Government site, Contractor personnel shall wear a badge which identifies the individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of the Agency at meetings, conferences, symposia, etc.

- **Travel:** No travel is anticipated under this work assignment.

IV. Schedule of Deliverables:

	Description	Due Dates
Task 0001	Work Plan	Per contract requirements
Task 0002	Quality Assurance Project Plan (QAPP)	30 days after contractor receives work assignment
Task 0002	Quality Assurance Documentation Report	June 30, 2019
Task 0002	Information Quality Guidelines Checklist for Influential Information	As requested by the WA-COR via written technical direction.
Task 0003	Progress Reports	Per contract requirements, all progress reports (when required) are to be provided with monthly invoice submissions.
Task 0004	Update WQSITS Maintenance Standards Operating Procedure	As requested by the WA-COR via written technical direction.
Task 0005	Maintain WQSITS Data	Within two weeks after the contractor is notified an update is needed.

PRINTING

All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

MEETINGS, CONFERENCES, TRANINING EVENTS, AWARD CEREMONIES AND RECEPTIONS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-09

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Maintenance of WQSITS Data

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
This amendment is to fully fund the work assignment at $94,704.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
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Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Gregory Stapleton (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-566-1028	
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-564-3133	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2036	
	FAX Number:	

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-09

☐ Other ☒ Amendment Number: 000002

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Maintenance of WQSITS Data

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		877
This Action:		410
Total:		1,287

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Gregory Stapleton (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-566-1028
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-3133
	FAX Number:	
Other Agency Official Name: Amber Hawkins (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	513-487-2126
	FAX Number:	
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	513-487-2036
	FAX Number:	

SCOPE OF WORK
Tetra Tech Contract #EP-C-14-016
Work Assignment #4-09
Amendment #2

Title:	**Maintenance of WQSITS Data**
Work Assignment Manager:	Gregory Stapleton Mail Code 4305T Standards & Health Protection Division (SHPD) Office of Science and Technology (OST) Office of Water (OW) (202) 566-1028 stapleton.gregory@epa.gov
Period of Performance:	Date of Issuance to June 30, 2019
Estimated LOE:	410 hours

Amendment Summary
The original LOE for authorized under the plan for this work assignment was 877 hours with a cost of $94,704. The WQSITS maintenance and tasks (Task 5) required more effort than we initially estimated given information we had before the work assignment started.

As of February 20, 2019, we estimate approximately 410 more hours will be needed to complete the work assignment tasks through June 30, 2019.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-13

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	NRSA 2018: External Benthic QA

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Chris Faulkner	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-566-1185 FAX Number:
Project Officer Name: Tanyan Bailey	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Courtney Stallworth	(Signature)	(Date)	Branch/Mail Code: Phone Number: 513-487-2002 FAX Number:

STATEMENT OF WORK

A. TITLE: NRSA 2018: External Benthic QA and Other QC Support

B. KEY EPA PERSONNEL

Work Assignment Contracting Officer Representative:

Name:	**Chris Faulkner**
Office:	Office of Water/Office of Wetlands, Oceans & Watersheds/ Watershed Restoration, Assessment, and Protection Division
Address:	1200 Pennsylvania Avenue NW (4503T), Washington, DC 20460
Telephone:	202-566-1185
E-mail:	Faulkner.chris@epa.gov

Alternate Work Assignment Contracting Officer Representative:

Name:	**Richard Mitchell**
Office:	Office of Water/Office of Wetlands, Oceans & Watersheds/ Watershed Restoration, Assessment, and Protection Division
Address:	1200 Pennsylvania Avenue NW (4503T), Washington, DC 20460
Telephone:	202-566-1379
E-mail:	Mitchell.Richard@epa.gov

C. PERIOD OF PERFORMANCE

July 1, 2018 **June 30, 2019**

D. TASKS

BACKGROUND:

The U.S. EPA, states and numerous other partners are conducting a survey of the rivers and streams to provide national and regional data on the condition of these waters. This assessment, the National Rivers and Streams Assessment (NRSA) 2018, is part of a program called the National Aquatic Resource Surveys (NARS). The NRSA 2018 is designed to use a probability-based network that will provide statistically valid information about river and stream condition with known confidence. NRSA 2018 field crews will collect samples from just over 1100 site visits. Crews will collect one benthic sample from each site.

PURPOSE:

The purpose of this work assignment (WA) is to provide laboratory support to the EPA Office of Water in implementing the NRSA 2018. The types of support required for this project include conducting an independent taxonomic re-identification of 10% of the NRSA benthic samples, and managing the reconciliation process to achieve the requirements as defined in the NRSA Quality Assurance Project Plan (QAPP) and Laboratory Operations Manual (LOM). The ultimate goal of the taxonomic re-identification process is to obtain consistency in the national dataset by evaluating the extent that primary and independent taxonomists reach the same results using the methods outlined in the LOM and QAPP, reconciling differences and making corrections to the dataset. The WA also supports sending proficiency test (PT) samples to NRSA labs conducting algal toxin analyses; and providing a presentation on the process used for the external QC, significant steps that are taken and purpose behind them to the OW staff.

GENERAL REQUIREMENTS:

Quality Assurance (QA)

The contractor shall adhere to the contract level Quality Management Plan. The contractor shall address the QA requirements of this work assignment through a combination of the NRSA 2018 QAPP and LOM which document how quality assurance and quality control shall be applied to the collection and use of environmental data and/or survey information for this WA.

The contractor shall document relevant QA activities in any deliverable. All QA documentation prepared under the WA shall be considered non-proprietary. The contractor shall provide a signed review sheet (in the front of the QAPP) indicating the QAPP and LOM have been read and shall be followed by all personnel participating in this WA.

The contractor shall submit relevant QA documentation as requested by the WACOR. The contractor shall permit a QA review of laboratory and/or data entry documents and procedures by an authorized agent of EPA at any time during the performance period (given advanced notification). Original records, such as laboratory notebooks, shall be retained for a minimum of three years from the date the final report is published by EPA. Unless the WACOR grants an exception, the contractor shall not publish findings based upon work conducted under this task order. This restriction shall remain in effect until EPA provides public access to the data.

Samples

Samples shall be provided to the contractor's lab for analyses. Samples shall be retained according to the NRSA LOM and QAPP.

TASKS WITH BENCHMARKS AND DELIVERABLES:

Task 1. Develop work plan and monthly progress reports

1.1 The contractor shall develop a work plan that describes how each task shall be carried out in accordance with the contract clause. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, accompanied by an explanatory narrative sufficient to identify the contractor's key assumptions on which the proposed staffing plan and budget are based, the basis for selection and qualifications of the contractor's proposed staff. If a subcontractor(s) is proposed and subcontractors are outside the local metropolitan area, the contractor shall include information on conducting surveillance over the management of subcontracted work and incurred subcontract costs. After EPA review, the contractor shall revise the WP, as warranted.

1.2 The contractor shall manage the WA and submit monthly progress and financial reports prepared and submitted in accordance with the contract clause. The monthly progress and financial reports shall be broken out by task and sub-task in this WA. The monthly progress report shall include project status, expenditures to date, unexpected problems or concerns, corrective actions, lessons learned, QA/QC activities, and next steps.

Task 2. Benthic Independent Taxonomic Quality Control Process

The contractor shall assign a project lead with expertise in benthic QC processes, taxonomy and bioassessments to set up a process to select 10% of the identified benthic samples to be re-identified by independent taxonomists. Five labs are conducting benthic analyses – the national contract labs (Avanti and EcoAnalysts) Oklahoma, North Carolina and Wisconsin. The contractor shall identify independent taxonomists to complete the re-identification work

2.1 The contractor shall set up a process to identify which processed samples shall be selected from the primary national and state benthic lab for re-identification. The WACOR will provide the

contractor with a sampling processing schedule for participating labs (most notably the national contract labs which are processing most of the samples) to aid in developing the process to identify QA samples, as well as to determine when QC waves (see 2.1.1) shall be held (i.e., when sufficient samples are expected to be completed by the labs). The contractor is responsible for contacting the labs with notification of which samples were selected and details on where to ship the samples for re-identification and for covering the cost of shipping samples to and from the QC taxonomists.

2.1.1 The QA process shall be staggered in 3 to 4 waves so that selected samples can be sent for re-identification shortly after they are identified by the primary lab throughout the field season.

2.2 The contractor shall provide the QC taxonomists with assigned samples to re-identify the samples following the protocols as described in the NRSA LOM and QAPP. Except in unusual circumstances, which the contractor shall discuss with the WACOR in advance, it is expected that entire samples shall be shipped to one QC taxonomist/taxonomy lab. The primary taxonomists/taxonomy labs (original processing labs) shall not be required to sort different types of organisms to send to different taxonomists.

2.2.1 The QC taxonomists shall not receive the results from the primary lab identifications, as the re-identification is done blindly.

2.2.2 If necessary, the QC taxonomist can take photos of particular organisms that can be used in reconciliation discussions.

2.3 At the completion of each wave of re-identification, the contractor shall schedule teleconference calls with relevant primary labs and QC taxonomists, to go over the results, reconcile the data and apply corrective actions to the dataset. If practical, the calls shall be set up in advance to facilitate availability of all necessary taxonomists. The calls shall be held as soon as possible following completion of QC identifications so that reconciliation actions can be addressed in samples already identified as well as upcoming identifications.

2.3.1 In advance of the meeting, the contractor shall provide a spreadsheet to attendees that includes (and is not limited to) primary lab information, sample ID, primary and QC counts, agreements vs disagreements, percent taxonomic disagreement (PTD), percent difference in enumeration (PDE) and percent taxonomic completeness (PTC). Photos can also be provided in advance to inform discussions. See attached spreadsheet for an example. The contractor shall work with the WACOR in advance of the first call to discuss what will be in the spreadsheet.

2.3.2 During the reconciliation calls, disagreements shall be discussed and resolved. The contractor shall be prepared to recalculate PTD and PDE based on taxonomic changes recommended during the reconciliation discussions, and provide those new estimates to attendees before the conclusion of the call. These recalculations do not constitute a change to the primary labs data (for the QC samples, the labs shall make those changes and submit to the contractor (see 2.4.1); for changes in the more complete dataset, labs shall submit those to EPA), but shall provide valuable information on whether the recommended actions shall result in meeting the QAPP objectives.

2.4 Within two working days of the call, the contractor shall provide the WACOR and all meeting participants with a concise summary of the call, including identification of problematic taxa, important points to note, a list of recommended actions for revisions and PTD/PDE results both before and after reconciliation (assuming change recommendations are accepted).

2.4.1 Once updated database files are received from the primary labs and QC taxonomists, the contractor shall recalculate PTD and PDE results and send to the WACOR.

2.5 The contractor shall provide WACOR with a list of labs that have or have not submitted updated files via email, at least one week before the start of the next wave of reconciliation calls.

2.6 Upon completion of the QA process, the contractor shall provide final project data to WACOR according to procedures in the QAPP and using the standardized data template and naming conventions. The contractor shall include a final summary report providing a list of all recommended actions for taxonomic revisions and details on the overall process as part of the final project report, including the original and revised PTD and PDE calculations.

2.7 The contractor shall respond to requests from EPA HQ as to status of QA process completion. The contractor shall notify the WACOR immediately when problems or issues arise. If needed, contractor shall respond to corrective actions according to written technical direction from the WACOR.

Task 3. Proficiency Test Samples

3.0 The contractor shall send out proficiency test samples to each lab conducting algal toxin and possibly other analyses at least once during the lab processing. The contractor shall work with the WACOR and the NRSA Laboratory Coordinator to determine how many samples to send to each lab, timing of the shipment and what concentrations, to send.

The External QC Coordinator shall instruct the QC contractor to provide one or two identical sets of freshwater QC samples (labeled as performance test (PT) samples) to all participating laboratories. Each set shall contain five samples to test the expected range of concentrations in the NRSA samples.

For the contract laboratory, the QC contractor shall provide the first set to be run with the first set of samples and a second set to be run at the midpoint of the assigned samples. If available, a third set shall be run with the final batch of samples. Because most state laboratories shall have relatively few samples that can be analyzed using a single kit, the QC contractor shall send only one set to each state laboratory.

Each laboratory shall run the QC samples following the same procedures used for the other samples. The External QC Coordinator shall compare the results and assess patterns in the data (e.g., one laboratory being consistently higher or lower than all others). Based upon the evaluation, the External QC Coordinator may request additional information from one or more laboratories about any deviations from the method or unique laboratory practices that might account for differences between the laboratory and others. With this additional information, the External QC Coordinator shall determine an appropriate course of action, including no action, flagging the data, or excluding some or all the laboratory's data.

The External QC Coordinator shall provide the QC contractor with the point of contacts for all participating laboratories.

3.1 After the labs have completed processing the samples and submitted those results to EPA, EPA will provide the results to the contractor. The contractor shall compare results from each lab to the actual expected concentration. If a significant problem is noted, the contractor shall alert the WACOR immediately.

3.2 Based on the results, the contractor shall provide a report to EPA for each of the individual indicators and for each lab within two weeks of receiving the sample results that identifies differences in the achieved results from expected, whether those differences are within the precision and/or accuracy expectations for the method, any potential problems or concerns, and recommendations.

Task 4. Biological External QC and Reconciliation Process Discussion and Presentation

4.0 The contractor shall discuss QC processes related to other types of biological indicators with EPA – for example the difference between processes applicable to benthics or similar samples that require separate aliquots of the sample be analyzed for QC purposes.

Acronyms

LOM Lab Operations Manual

NARS National Aquatic Resource Surveys

NRSA National Rivers and Streams Assessment

PDE Percent Difference in Enumeration

PTD Percent Taxonomic Difference

PTC Percent Taxonomic Completeness (absolute difference)

QAPP Quality Assurance Project Plan

WACOR Work Assignment Contracting Officer Representative

E. SUMMARY OF DELIVERABLES AND SCHEDULE:

Task	Sub-Task	Deliverable	Due
1	1	Workplan	20 days of receipt of WA
1	2	Progress and financial reports	Monthly
2	1	Copy of contractors proposed QA process, schedule and list of identified QC taxonomists.	20 days of receipt of WA
2	2	Complete list of samples assigned to QC taxonomists	By October 31, 2018 or per written technical direction
2	3	Copy of reconciliation conference call schedule, and results summary spreadsheet	Initial schedule – August 15, 2018; updates monthly Results summary – at least one week prior to each call
2	4	Summary of conference calls and recommendations	Within two working days of conference call
2	4	Recalculate PTD and PDE and update spreadsheet	Within 2 working days of receipt of updated lab databases
2	5	Provide status reports on labs providing updated files	At least 1 week before the next wave of reconciliation calls
2	6	Progress and financial reports	In accordance with contract requirements

			and reporting requirements outline below.
2	7	Provide final data/report to WACOR	By April 30, 2019
2	7	Notify WACOR immediately when problems or issues arise.	Immediately upon knowledge of incident
3	0	PT samples to labs	Per discussion with WACOR
3	1	Notification of significant issues from results comparison	Immediately upon knowledge
3	2	PT Reports	Within two weeks of receipt of if results from labs
4	0	Discussion with WACOR	Within 60 days of receipt of WA
4	1	Presentation	Per written technical direction

F. REPORTING

All documentation and reporting under the work assignment shall be in compliance with contract requirements. Additional requirements for this work assignment are outlined below.

Progress Reports

The contractor shall manage the work assignment and submit monthly progress reports and copies of the invoices to the Work Assignment Manager (WACOR) together within the first week of every month. Monthly progress reports shall include:

- Cost breakouts by task and sub-task by site and sample ID.
- Description of progress on all task activities
- The latest versions of tracking tables, logs, or other summaries of activity tracked by data system or tool, a description of unanticipated problems encountered, including QA/QC, and corrective actions, in completing the progress on the WA
- A description of any "lessons learned" while performing work on the WA

G. TRAVEL

Travel may be necessary under Task 4 of this WA, for the contractor to attend 1 face to face meeting. One contractor may be requested to present in Washington, D.C. The presentation will be no longer than 2.5 hours.

H. CONTRACTOR IDENTIFICATION

Contractor personnel shall always identify themselves as contractor employees by name and organization and physically display that information through an identification badge. Contractor personnel are prohibited from acting as the Agency's official representative. The contractor shall refer any questions relating to the interpretation of EPA policy, guidance, or regulation to the CO, PO and/or WACOR.

I. PRINTING

All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

J. MEETINGS, CONFERENCES, TRAINING EVENTS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR. The total costs for all activities related to each conference, meeting, and training event described in this work assignment (WA 4-13) shall not exceed $20,000.

K. ATTACHMENTS

- A: National Rivers and Streams Assessment 2018 Laboratory Operations Manual
- B: National Rivers and Streams Assessment 2018 Quality Assurance Project Plan
- C: Example QC Comparison Worksheet from previous benthos assessment

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-15

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Technical Support for Developm

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW: 3.1, 3.2, 3.3, 3.4, 3.5, 3.10, 3.12, 3.14

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Shamima Akhter (Signature) (Date)		Branch/Mail Code: Phone Number: 202-566-1341 FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Courtney Stallworth Courtney Stallworth ELECTRONIC SIGNATURE (Signature)	06/25/2018 (Date)	Branch/Mail Code: Phone Number: 513-487-2002 FAX Number:

PERFORMANCE WORK STATEMENT
Tetra Tech Contract No. EP-C-14-016
Work Assignment # 4 - 15

A. TITLE: Technical Support for Development of Human Health and Aquatic Life Water Quality Criteria

B. Work Assignment Contracting Officer Representative (WA-COR)

NAME: Shamima Akhter
TITLE: Microbiologist
PHONE: 202-566-1341
FAX: 202-566-1140
E-MAIL: Akhter.shamima@epa.gov

Alternate Work Assignment Contracting Officer Representative (AWA-COR)

NAME: John Ravenscroft
TITLE: Microbiologist
PHONE: 202-566-1101
FAX: 202-566-1140
E-MAIL: ravenscroft.john@epa.gov

C. PERIOD OF PERFORMANCE: July 1, 2018 through 06/30/2019

D TASKS:

TASK 1 – Work plan and monthly progress reports

The contractor shall develop a detail work plan and cost estimate for tasks outlined in this work assignment. The plan shall contain, but not be limited to, work-flowchart, elaborate schedule, staffing plan and qualifications of proposed staff, budget for task and level of effort (LOE). Prior to the submission of the work plan, the contractor shall consult with the EPA WACOR via conference call to mitigate any potential issues that need clarifications. The contractor shall include information on plans to manage work and control contract costs. All P levels, hours and total dollars for tasks shall be provided and costs greater than $100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency. The plan shall be submitted in accordance with the requirements noted in Contract EP-C-14-016.

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports shall include a table with the invoice LOE and costs broken out by the tasks in this work assignment.

TASK 2 – Quality Assurance

This work assignment requires the use of only existing data. This Quality Assurance Section only applies to Subtask F of Task 3. The tasks in this Performance Work Statement (PWS) require the use of secondary data/analyses, model application and fall under the scope of the approved contract-level quality assurance project plan (QAPP) (EP-C-11-009; WA # 4-60) and the supplemental quality assurance project plan (QAPP) Number 403 (Revision 2) (EP-C-14-016, WA# 1-15), February 16, 2016. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall assure the quality and analyses of the secondary data to be used under this work assignment.

Any additional quality assurance requirements shall be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment-specific QAPP supplement, which shall be approved by the EPA WACOR & HECD QAC before activities covered by the additional QA requirements through-out performance of Subtask F of this work assignment.

Subtask F in this WA requires the use of secondary data and shall be implemented in accordance with approved project-specific QAPP (EP-C-11-009; WA # 4-60) and the supplemental quality assurance project plan (QAPP) Number 403 (Revision 2) (EP-C-14-016, WA# 1-15), February 16, 2016 to assure that the quality of the primary or secondary data and analyses (including modeling and statistical analyses) are accurate and correct.

Subtask 2.1: Information Quality Guidelines & Information Quality Review

The contractor shall ensure the products developed under this work assignment comply with EPA's Quality System and other related QA policies, the Office of Water's Quality Management Plan. The contractor shall ensure that the information in the products meets the standards of "Objectivity", "Integrity","Utility" , "Reproducibility" and "Transparency" as described in the OW Information Quality Guideline (IQG) for each deliverables from this work assignment as they may be used in Agency decision-making and/or will be publicly available documents. If requested by the EPA WACOR via written technical direction, the contractor shall provide a memorandum describing how the planned product(s) developed meet EPA's & OW's Information Quality Guidelines. As part of that memo, the contractor shall document the quality assurance procedures used in developing the deliverables under this Work Assignment. The contractor shall provide the memo at the time it delivers the Final Summary Report. As directed by the WACOR via written technical direction, the contractor shall meet with the WACOR (through teleconference) to discuss the Guidelines and the contractor's role in completing the memo and OW IQG checklist.

TASK 3 – Provide Technical Support

Background: In June 2015, EPA published final updated ambient water quality criteria for the protection of human health for 94 chemical pollutants. Ambient water quality criteria developed by EPA under Clean Water Act section 304(a) represent specific levels of chemicals or conditions in a water body that are not expected to cause adverse effects to human health. EPA is required to develop and publish water quality criteria that reflect the latest scientific knowledge. These revised human health criteria to reflect the latest scientific information, including updated exposure factors (body weight, drinking water consumption rates, fish consumption rate), bioaccumulation factors, and toxicity factors (reference dose, cancer slope factor). The criteria were updated to follow the current

EPA methodology for deriving human health criteria (USEPA 2000). EPA also developed chemical specific science documents for each of the 94 chemical pollutants. The science documents detail the latest scientific information supporting the updated final human health criteria, particularly the updated toxicity and exposure input values.

Due to outstanding technical issues, EPA did not update human health criteria for the following chemical pollutants at this time: antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium (III and VI), copper, manganese, methylmercury, nickel, nitrates, nitrosamines, Nnitrosodibutylamine, N-nitrosodiethylamine, N-nitrosopyrrolidine, N-nitrosodimethylamine, Nnitrosodi- n-propylamine, N-nitrosodiphenylamine, polychlorinated biphenyls (PCBs), selenium, thallium, zinc, or 2,3,7,8-TCDD (dioxin).

Task Description: The contractor shall provide technical support for subtask 3.F as described in the PWS. This includes collection and evaluation of the state-of-the-science for specific contaminants and development of human health water quality criteria. Specific activities shall include conducting literature searches and performing systematic reviews; synthesizing evidence from peer reviewed literature and guideline studies to support hazard identification and dose-response modeling for specific contaminants and groups of contaminants; synthesizing evidence from peer reviewed literature, reports and databases to support human health risk and exposure assessments, including occurrence and prevalence of pollutants and routes of exposure; providing technical support in dose-response modeling and statistical analyses of exposure, toxicity and human health data to derive reference values; assessing the potential impact of contaminants on sensitive populations/life-stages in humans; preparing human health risk assessment documents; evaluating distributional or probabilistic approaches for criteria development; responding to Agency and external reviewers' comments; assisting and conducting webinars/workshops; and developing communication materials and Federal Register notices in supporting OST/HECD's mission in evaluating contaminants to protect public health.

The Contractor shall perform the specific tasks in the PWS in accordance with the appropriate EPA risk assessment guidance and science policy guidance (e.g., 2000 Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health, 2005 Guidelines for Carcinogenic Risk Assessment, 1985 etc.).

Subtask 3. F: The Contractor shall prepare, evaluate, and revise technical support documents for the development of human health ambient water quality criteria. These documents shall include hazard identification, metabolism, exposure assessment, mode of action analysis, dose-response modeling, susceptibility/sensitivity and uncertainty analysis and risk characterization of contaminants to develop human health criteria for various water media (e.g., surface water and drinking water). Additionally, the Contractor shall identify and include information on effective risk management practices and risk reduction approaches when available. The contractor shall evaluate the literature and using EPA methodology determine the appropriate relative source contribution, bioaccumulation factors, and toxicity factors (reference dose, cancer slope factor). EPA has done a preliminary evaluation for updated toxicity values that can be shared.

The contractor shall develop updated ambient water quality criteria for the 24 contaminants (Arsenic, Antimony, Asbestos, Barium, Beryllium, Cadmium, Chromium III, Chromium VI, Copper, Manganese, Methylmercury, Nickel, Nitrate, Nitrosamines, N-nitrosodibutylamine, N-

nitrosodiethylamine, N-nitrosodimethylamine, N-nitrosodi-n-propylamine, N-nitrosodiphenylamine, N-nitrosopyrrolidine, Polychlorinated biphenyls (PCBs), Thallium, Selenium, Zinc, 2,3,7,8-TCDD (dioxin) that were not addressed in EPA's 2015 update.

The contractor shall develop chemical-specific science documents for each of the 24 chemical pollutants. The science documents shall detail the latest scientific information supporting the updated final human health criteria, particularly the updated toxicity and exposure input values described in the June 2015 update (body weight, drinking water consumption rates, fish consumption rate).

Subtask 3.F.1: In addition to the tasks currently described under Subtask 3.F of Work Assignment 2-15, the contractor shall perform the following tasks related to calculating national bioaccumulation factors (BAFs) to support the development of updated human health ambient water quality criteria (HH-AWQC) for the contaminants that were not addressed in EPA's 2015 update:

- Evaluate the variability of BAF and BCF values from literature that the contractor has screened for use in supporting the development of HH-AWQC.
- Perform correlations of metals concentrations and applicable parameters recommended in EPA's (2007) *Framework for Metals Risk Assessment* for discussion with EPA.
- Once final draft BAFs are developed and reviewed by EPA, provide support to EPA in developing a spreadsheet and description of these BAF calculations for public comment.
- Provide support to EPA in responding to public comments received on the final draft BAFs, and preparing final BAF values and documentation to support developing final HH-AWQC.
- Evaluate time 0 and background metal level concentrations provided in original bioaccumulation data sources for use in determining "essential metal concentrations."
- Prepare ADA 508-compliant versions of final criteria documents.
- Develop a final BAF calculation spreadsheet and companion document for the updated 24 criteria chemicals.
- Complete literature review and perform BAF calculations for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

- **Technical Edits for GenX and Perfluorobutane Sulfonic Acid (PFBS) Toxicity Values Documents and 508 Compliance for GenX and PFBS Toxicity Value Document**

- **Technical Editing**
- The contractor shall review the PFBS document (provided separately) to ensure correct grammar, spelling, and punctuation; consistency of capitalization, spelling, and hyphenation; agreement of subjects and verbs; check materials, especially tables, figures, units of measure, headings, etc. for consistency of style and format; check placement of tables and figures; and many other details of style. The contractor shall cross-check references cited in the document to ensure that only those references are included in the reference list. References in the reference list shall be reviewed to ensure that they are complete, accurate, and properly formatted.

- The contractor shall make any necessary revisions and/or formatting corrections to the PFBS documents. The contractor shall use features of MS Word as needed (e.g., indexing, generated Table of Contents, styles, text art, graphics, etc.). Placement of figures and tables, pagination,

and visual checks of page layout shall be completed before a document is submitted to the EPA. Revisions made to documents shall be proofread to ensure consistency and accuracy.

- The contractor shall submit a draft final version of the MS Word versions of the PFBS documents for EPA review. Once given direction from EPA that the MS Word versions of the GenX and PFBS documents are final, the contractor shall convert the MS Word documents to 508-compliant PDF files.

The contractor shall assist the WACOR in response to comments and revisions to technical support documents for the development of human health ambient water quality criteria.

Technical Editing: The contractor shall provide technical editing of varying degrees. The contractor shall review reports for subtask F of task 3 to ensure correct grammar, spelling, and punctuation; consistency of capitalization, spelling, and hyphenation; agreement of subjects and verbs; check materials, especially tables, figures, units of measure, headings, etc. for consistency of style and format; check placement of tables and figures; and many other details of style. The Contractor shall cross-check references cited in the document to ensure that only those references are included in the reference list. References in the reference list shall be reviewed to ensure that they are complete, accurate, and properly formatted.

The contractor shall make any necessary revisions and/or formatting corrections to documents. The contractor shall use features of MS Word as needed (e.g., indexing, generated Table of Contents, styles, text art, graphics, etc.). Placement of figures and tables, pagination, and visual checks of page layout shall be completed before a document is submitted to the EPA. Revisions made to documents shall be proofread to ensure consistency and accuracy.

The EPA WACOR will provide the specific details of the technical support needed through written technical direction to the contractor.

Technical Expertise Required:
The key technical individual(s) who work on this assignment shall have an expert working knowledge of EPA's guidance, statutory requirements and methodology for the development of 304(a) criteria, health advisories, etc. for the protection of human health. The Contractor shall possess the technical expertise to perform risk assessments, including problem formulation, hazard identification, exposure analysis, risk characterization and risk communication.

TASK 4 – Provide Summary Reports and Presentations

Background: Pre-decisional processes require the collection and analysis of in-depth and issue-specific technical research and analysis. The information is often needed in a summarized format to give progress updates to internal management.

Task Description: The contractor shall provide a variety of summary materials for the purpose of presenting information to and briefing internal management. Given the case-specific nature of these requests, additional details/information regarding what these deliverables shall look like will be provided via written technical direction. All final documents delivered shall be ADA 508-compliant

in MS Word, PDF, PowerPoint, Excel or other format as directed via written technical direction by the WACOR.

Subtask A. Fact Sheets
Subtask B. Visual Media

TASK 5 - Assist with Communication and Outreach

The contractor shall assist with efforts to communicate information about water quality standards-related actions to the public and key stakeholders. This includes development of communication strategies that identify target audiences, messages to reach those audiences, and products appropriate for each audience, in addition to identifying distribution mechanisms, and evaluating outreach efforts.

Sub Task 5.1: Assist and conduct four (4) webinars and four (4) workshops, and prepare two (2) newsletters under this current performance period.

The contractor shall provide logistics support for four (4) webinars, two (2) newsletters, and four (4) workshops under this current performance period ending June 30, 2019. The dates for these webinars, newsletters, and workshops are still to be determined.

Webinar Support:
The contractor shall assist EPA WACOR with:

1. **Pre-webinar**
   The contractor shall develop for each webinar the following materials:
   - Webinar announcement;
   - Contact presenters and request short biography and presentation materials;
   - Set up the Adobe webinar with agenda (provided by the EPA WACOR), and presentation materials.
   - Set up and provide support for a webinar dry run with speakers.

The contractor shall provide the EPA WACOR with the above materials for review and approval. Based on the EPA WACOR's comments, through written technical direction, the contractor shall develop the Final Preliminary Agenda, Announcement and Pre-Registration.

The Final Preliminary Agenda, Announcement and Pre-Registration shall be QA/QC'd by the Contractor and reviewed by the EPA WACOR to assure accuracy of information and shall contain no typographical errors and sent electronically to all members and invited speakers.

The EPA WACOR will provide the contractor a list of items for the final agenda. The contractor shall format the final agenda for the meeting. The Contractor shall provide the EPA WACOR a draft of the agenda for review and approval. Based on the EPA WACOR's comments, the contractor shall develop the final agenda.

The final agenda shall be QA/QC'd by the contractor to assure accuracy of information and typographical errors.

2. **Webinar**

The contractor shall provide logistics support throughout the webinar to:

- Provide the logistics at the beginning of the webinar;
- Muting and unmuting the phone lines;
- Record presentations and discussions for the post-meeting report.

3. **Post-webinar**
    - The contractor shall deliver a draft meeting summary which shall include transcript of audio-taping and the notes taken from the meeting. The EPA WACOR will review the draft summary and provide comments to the contractor. After incorporating the EPA WACOR's comments, the contractor shall distribute the draft meeting summary to the speakers for review before finalizing the meeting summary report. The contractor shall produce a final draft based on the EPA WACOR's and the speakers written comments. The contractor shall send a copy of the final draft electronically, in the format specified, to the EPA WACOR. After receiving comments from the EPA WACOR, the contractor shall finalize the Meeting Summary Report. The summary reports shall be 508 compliant

Newsletter Support:

4. The contractor shall provide support to the EPA WACOR with developing two (2) 508-compliant newsletters. The contractor shall develop draft summaries and include information provided by webinar speakers, states, tribes, and EPA in the newsletter. The contractor shall submit several interim drafts (frequency to be determined in consultation with the EPA WACOR) and a draft final version of the MS version of the newsletter for EPA review. Once given direction from EPA that the MS Word version of the newsletter is final, the contractor shall convert the MS Word document to a 508-compliant PDF file.

Workshop Support:

The contractor shall assist EPA WACOR with:

5. **Pre-workshop**
    - The contractor shall contact non-federal speakers and coordinate their travel arrangements (hotel and air travel). The contractor shall provide EPA WACOR rough estimates for approval before contacting speakers.
    - Hotel arrangements shall be done with the hotel chosen by the Workshop organizers, and the airfare shall be done by the most direct and least expensive economy class airfare.
    - The EPA WACOR will provide workshop materials such as Agenda, workshop information sheet, list of participants and presenter biographies, resource list and evaluation form) for printing and package preparation.
    - The contractor shall send via email the workshop materials to the EPA Regional representative or meeting location.
    - The contractor shall develop discussion questions and other meeting preparation materials for EPA WACOR approval; upon EPA WACOR approval, the contractor shall distribute these materials to meeting attendees.
    - The contractor shall provide meeting facilitation support.
    - The contractor shall assist with mailing any materials as appropriate

6. **Workshop**
   - The contractor shall provide technical support for speakers presenting online (through Adobe webinar), as stated above.
   - The contractor shall deliver a draft meeting summary notes taken from the meeting that includes responses to discussion questions, attendee biographies, and presentations as applicable. The EPA WACOR shall review the draft summary and provide comments to the contractor. After incorporating the EPA WACOR's comments, the contractor shall distribute the draft meeting summary to the speakers for review before finalizing the meeting summary report. The contractor shall produce a final draft based on the EPA WACOR's and the speakers written comments. The contractor shall send a copy of the final draft electronically, in the format specified, to the EPA WACOR. After receiving comments from the EPA WACOR, the contractor shall finalize the Meeting Summary Report. The summary report shall be 508 compliant.

E. SCHEDULE OF BENCHMARKS & DELIVERABLES:

Task/ Subtask	DELIVERABLE	Schedule
1	**Work Plan**	As per Contract EP-C-14-016 requirements
2.1	**Information Quality Guidelines & Information Quality Review**	Due as requested by the EPA WA-COR via written technical direction
3.F	**Criteria Documents for 24 Contaminants**	Due as requested by the EPA WA-COR via written technical direction
3.F.1	**Draft BAFs**	Due as requested by the EPA WA-COR via written technical direction
3.F.1	**Final BAFs**	Due as requested by the EPA WA-COR via written technical direction
4	**Presentations and Follow-up Materials**	Due as requested by the EPA WA-COR via written technical direction
5	**Communication Strategies**	Due as requested by the EPA WA-COR via written technical direction
5.1	**Webinar and Workshop support**	TBD

Draft written deliverable(s) for review by the EPA WACOR shall be prepared in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables.

Final written deliverable(s) shall be furnished in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables, after written comments are received from the EPA WACOR.

TRAVEL: Some travel is anticipated under this work assignment. For cost estimate purposes, assume three one-day trips for one person from contractor location to any site nationwide (use trip to Florida

to generate estimate) as identified by the EPA WACOR, with site visit schedules arranged to minimize travel time. All travel under this WA shall be in compliance with contract requirements.

PRINTING

All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

CONTRACTOR IDENTIFICATION

Contractor personnel shall clearly identify corporate affiliation at the start of any meeting or training workshop. While attending EPA-sponsored meetings, conferences, symposia, etc., or while on a Government site, Contractor personnel shall wear a badge that identifies the individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of the Agency meetings, conferences, symposia, etc.

MEETINGS, CONFERENCES, TRANINING EVENTS, AWARD CEREMONIES AND RECEPTIONS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA Contract Level COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA Contract Level COR.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-15

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Technical Support for Developm

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
This amendment adds additional LOE to the scope (please see attached PWS).

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Shamima Akhter (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-566-1341	
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-564-3133	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2036	
	FAX Number:	

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-15

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Technical Support for Developm

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
This amendment adds additional LOE to the scope (please see attached PWS).

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Shamima Akhter (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-566-1341
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Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
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	Phone Number:	
	FAX Number:	
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	513-487-2036
	FAX Number:	

PERFORMANCE WORK STATEMENT
Tetra Tech Contract No. EP-C-14-016
Work Assignment # 4 – 15 Amendment 1

A. TITLE: Technical Support for Development of Human Health and Aquatic Life Water Quality Criteria

B. Work Assignment Contracting Officer Representative (WA-COR)

NAME: Shamima Akhter
TITLE: Microbiologist
PHONE: 202-566-1341
FAX: 202-566-1140
E-MAIL: Akhter.shamima@epa.gov

Alternate Work Assignment Contracting Officer Representative (AWA-COR)

NAME: John Ravenscroft
TITLE: Microbiologist
PHONE: 202-566-1101
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C. PERIOD OF PERFORMANCE: Date of issuance through 06/30/2019

D TASKS:

TASK 1 – Work plan and monthly progress reports

Purpose: The purpose of this Amendment 1 is to increase LOE and to add tasks on Subtask 3.F.1 (highlighted)

The contractor shall develop a detail work plan and cost estimate for tasks outlined in this work assignment. The plan shall contain, but not be limited to, work-flowchart, elaborate schedule, staffing plan and qualifications of proposed staff, budget for task and level of effort (LOE). Prior to the submission of the work plan, the contractor shall consult with the EPA WACOR via conference call to mitigate any potential issues that need clarifications. The contractor shall include information on plans to manage work and control contract costs. All P levels, hours and total dollars for tasks shall be provided and costs greater than $100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency. The plan shall be submitted in accordance with the requirements noted in Contract EP-C-14-016.

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports shall include a table with the invoice LOE and costs broken out by the tasks in this work assignment.

TASK 2 – Quality Assurance

This work assignment requires the use of only existing data. This Quality Assurance Section only applies to Subtask F of Task 3. The tasks in this Performance Work Statement (PWS) require the use of secondary data/analyses, model application and fall under the scope of the approved contract-level quality assurance project plan (QAPP) (EP-C-11-009; WA # 4-60) and the supplemental quality assurance project plan (QAPP) Number 403 (Revision 2) (EP-C-14-016, WA# 1-15), February 16, 2016. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall assure the quality and analyses of the secondary data to be used under this work assignment.

Any additional quality assurance requirements shall be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment-specific QAPP supplement, which shall be approved by the EPA WACOR & HECD QAC before activities covered by the additional QA requirements through-out performance of Subtask F of this work assignment.

Subtask F in this WA requires the use of secondary data and shall be implemented in accordance with approved project-specific QAPP (EP-C-11-009; WA # 4-60) and the supplemental quality assurance project plan (QAPP) Number 403 (Revision 2) (EP-C-14-016, WA# 1-15), February 16, 2016 to assure that the quality of the primary or secondary data and analyses (including modeling and statistical analyses) are accurate and correct.

Subtask 2.1: Information Quality Guidelines & Information Quality Review

The contractor shall ensure the products developed under this work assignment comply with EPA's Quality System and other related QA policies, the Office of Water's Quality Management Plan. The contractor shall ensure that the information in the products meets the standards of "Objectivity", "Integrity","Utility" , "Reproducibility" and "Transparency" as described in the OW Information Quality Guideline (IQG) for each deliverables from this work assignment as they may be used in Agency decision-making and/or will be publicly available documents. If requested by the EPA WACOR via written technical direction, the contractor shall provide a memorandum describing how the planned product(s) developed meet EPA's & OW's Information Quality Guidelines. As part of that memo, the contractor shall document the quality assurance procedures used in developing the deliverables under this Work Assignment. The contractor shall provide the memo at the time it delivers the Final Summary Report. As directed by the WACOR via written technical direction, the contractor shall meet with the WACOR (through teleconference) to discuss the Guidelines and the contractor's role in completing the memo and OW IQG checklist.

TASK 3 – Provide Technical Support

Background: In June 2015, EPA published final updated ambient water quality criteria for the protection of human health for 94 chemical pollutants. Ambient water quality criteria developed by EPA under Clean Water Act section 304(a) represent specific levels of chemicals or conditions in a water body that are not expected to cause adverse effects to human health. EPA is required to develop and publish water quality criteria that reflect the latest scientific knowledge. These revised human health criteria to reflect the latest scientific information, including updated exposure factors (body

weight, drinking water consumption rates, fish consumption rate), bioaccumulation factors, and toxicity factors (reference dose, cancer slope factor). The criteria were updated to follow the current EPA methodology for deriving human health criteria (USEPA 2000). EPA also developed chemical specific science documents for each of the 94 chemical pollutants. The science documents detail the latest scientific information supporting the updated final human health criteria, particularly the updated toxicity and exposure input values.

Due to outstanding technical issues, EPA did not update human health criteria for the following chemical pollutants at this time: antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium (III and VI), copper, manganese, methylmercury, nickel, nitrates, nitrosamines, Nnitrosodibutylamine, N-nitrosodiethylamine, N-nitrosopyrrolidine, N-nitrosodimethylamine, Nnitrosodi- n-propylamine, N-nitrosodiphenylamine, polychlorinated biphenyls (PCBs), selenium, thallium, zinc, or 2,3,7,8-TCDD (dioxin).

Task Description: The contractor shall provide technical support for subtask 3.F as described in the PWS. This includes collection and evaluation of the state-of-the-science for specific contaminants and development of human health water quality criteria. Specific activities shall include conducting literature searches and performing systematic reviews; synthesizing evidence from peer reviewed literature and guideline studies to support hazard identification and dose-response modeling for specific contaminants and groups of contaminants; synthesizing evidence from peer reviewed literature, reports and databases to support human health risk and exposure assessments, including occurrence and prevalence of pollutants and routes of exposure; providing technical support in dose-response modeling and statistical analyses of exposure, toxicity and human health data to derive reference values; assessing the potential impact of contaminants on sensitive populations/life-stages in humans; preparing human health risk assessment documents; evaluating distributional or probabilistic approaches for criteria development; responding to Agency and external reviewers' comments; assisting and conducting webinars/workshops; and developing communication materials and Federal Register notices in supporting OST/HECD's mission in evaluating contaminants to protect public health.

The Contractor shall perform the specific tasks in the PWS in accordance with the appropriate EPA risk assessment guidance and science policy guidance (e.g., 2000 Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health, 2005 Guidelines for Carcinogenic Risk Assessment, 1985 etc.).

Subtask 3. F: The Contractor shall prepare, evaluate, and revise technical support documents for the development of human health ambient water quality criteria. These documents shall include hazard identification, metabolism, exposure assessment, mode of action analysis, dose-response modeling, susceptibility/sensitivity and uncertainty analysis and risk characterization of contaminants to develop human health criteria for various water media (e.g., surface water and drinking water). Additionally, the Contractor shall identify and include information on effective risk management practices and risk reduction approaches when available. The contractor shall evaluate the literature and using EPA methodology determine the appropriate relative source contribution, bioaccumulation factors, and toxicity factors (reference dose, cancer slope factor). EPA has done a preliminary evaluation for updated toxicity values that can be shared.

The contractor shall develop updated ambient water quality criteria for the 24 contaminants (Arsenic, Antimony, Asbestos, Barium, Beryllium, Cadmium, Chromium III, Chromium VI, Copper, Manganese, Methylmercury, Nickel, Nitrate, Nitrosamines, N-nitrosodibutylamine, N-nitrosodiethylamine, N-nitrosodimethylamine, N-nitrosodi-n-propylamine, N-nitrosodiphenylamine, N-nitrosopyrrolidine, Polychlorinated biphenyls (PCBs), Thallium, Selenium, Zinc, 2,3,7,8-TCDD (dioxin) that were not addressed in EPA's 2015 update.

The contractor shall develop chemical-specific science documents for each of the 24 chemical pollutants. The science documents shall detail the latest scientific information supporting the updated final human health criteria, particularly the updated toxicity and exposure input values described in the June 2015 update (body weight, drinking water consumption rates, fish consumption rate).

Subtask 3.F.1: In addition to the tasks currently described under Subtask 3.F of Work Assignment 2-15, the contractor shall perform the following tasks related to calculating national bioaccumulation factors (BAFs) to support the development of updated human health ambient water quality criteria (HH-AWQC) for the contaminants that were not addressed in EPA's 2015 update:

- Evaluate the variability of BAF and BCF values from literature that the contractor has screened for use in supporting the development of HH-AWQC.
- Perform correlations of metals concentrations and applicable parameters recommended in EPA's (2007) *Framework for Metals Risk Assessment* for discussion with EPA.
- Once final draft BAFs are developed and reviewed by EPA, provide support to EPA in developing a spreadsheet and description of these BAF calculations for public comment.
- Provide support to EPA in responding to public comments received on the final draft BAFs, and preparing final BAF values and documentation to support developing final HH-AWQC.
- Evaluate time 0 and background metal level concentrations provided in original bioaccumulation data sources for use in determining "essential metal concentrations."
- Prepare ADA 508-compliant versions of final criteria documents.
- Develop a final BAF calculation spreadsheet and companion document for the updated 24 criteria chemicals.
- Complete literature review and perform BAF calculations for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

- **Technical Edits for GenX and Perfluorobutane Sulfonic Acid (PFBS) Toxicity Values Documents and 508 Compliance for GenX and PFBS Toxicity Value Document**

- **Technical Editing**
- The contractor shall review the PFBS document (provided separately) to ensure correct grammar, spelling, and punctuation; consistency of capitalization, spelling, and hyphenation; agreement of subjects and verbs; check materials, especially tables, figures, units of measure, headings, etc. for consistency of style and format; check placement of tables and figures; and many other details of style. The contractor shall cross-check references cited in the document to ensure that only those references are included in the reference list. References in the reference list shall be reviewed to ensure that they are complete, accurate, and properly formatted.

- The contractor shall make any necessary revisions and/or formatting corrections to the PFBS documents. The contractor shall use features of MS Word as needed (e.g., indexing, generated Table of Contents, styles, text art, graphics, etc.). Placement of figures and tables, pagination, and visual checks of page layout shall be completed before a document is submitted to the EPA. Revisions made to documents shall be proofread to ensure consistency and accuracy.

- The contractor will submit a draft final version of the MS Word versions of the PFBS documents for EPA review. Once given direction from EPA that the MS Word versions of the GenX and PFBS documents are final, the contractor will convert the MS Word documents to 508-compliant PDF files.

- ***Technical Editing of Non-PFAS Related Assessments:*** The contractor will provide technical editing of varying degrees to non-PFAS related assessments. The contractor will review reports provided by EPA to ensure correct grammar, spelling, and punctuation; consistency of capitalization, spelling, and hyphenation; agreement of subjects and verbs; check materials, especially tables, figures, units of measure, headings, etc. for consistency of style and format; check placement of tables and figures; and check many other details of style. The contractor will cross-check references cited in the document to ensure that only those references are included in the reference list. References in the reference list will be reviewed to ensure that they are complete, accurate, and properly formatted.

- The contractor will make any necessary revisions and/or formatting corrections to non-PFAS related assessments. The contractor will use features of MS Word as needed (e.g., indexing, generated Table of Contents, styles, text art, graphics). Placement of figures and tables, pagination, and visual checks of page layout will be completed before a document is submitted to EPA. Revisions made to documents will be proofread to ensure consistency and accuracy. The WACOR will provide the specific details of the technical support needed through technical direction to the contractor.

The contractor shall assist the WACOR in response to comments and revisions to technical support documents for the development of human health ambient water quality criteria.

Technical Editing: The contractor shall provide technical editing of varying degrees. The contractor shall review reports for subtask F of task 3 to ensure correct grammar, spelling, and punctuation; consistency of capitalization, spelling, and hyphenation; agreement of subjects and verbs; check materials, especially tables, figures, units of measure, headings, etc. for consistency of style and format; check placement of tables and figures; and many other details of style. The Contractor shall cross-check references cited in the document to ensure that only those references are included in the reference list. References in the reference list shall be reviewed to ensure that they are complete, accurate, and properly formatted.

The contractor shall make any necessary revisions and/or formatting corrections to documents. The contractor shall use features of MS Word as needed (e.g., indexing, generated Table of Contents, styles, text art, graphics, etc.). Placement of figures and tables, pagination, and visual checks of page layout shall be completed before a document is submitted to the EPA. Revisions made to documents shall be proofread to ensure consistency and accuracy.

The EPA WACOR will provide the specific details of the technical support needed through written technical direction to the contractor.

Technical Expertise Required:
The key technical individual(s) who work on this assignment shall have an expert working knowledge of EPA's guidance, statutory requirements and methodology for the development of 304(a) criteria, health advisories, etc. for the protection of human health. The Contractor shall possess the technical expertise to perform risk assessments, including problem formulation, hazard identification, exposure analysis, risk characterization and risk communication.

TASK 4 – Provide Summary Reports and Presentations

Background: Pre-decisional processes require the collection and analysis of in-depth and issue-specific technical research and analysis. The information is often needed in a summarized format to give progress updates to internal management.

Task Description: The contractor shall provide a variety of summary materials for the purpose of presenting information to and briefing internal management. Given the case-specific nature of these requests, additional details/information regarding what these deliverables shall look like will be provided via written technical direction. All final documents delivered shall be ADA 508-compliant in MS Word, PDF, PowerPoint, Excel or other format as directed via written technical direction by the WACOR.

Subtask A. Fact Sheets
Subtask B. Visual Media

TASK 5 - Assist with Communication and Outreach

The contractor shall assist with efforts to communicate information about water quality standards-related actions to the public and key stakeholders. This includes development of communication strategies that identify target audiences, messages to reach those audiences, and products appropriate for each audience, in addition to identifying distribution mechanisms, and evaluating outreach efforts.

Sub Task 5.1: <u>Assist and conduct four (4) webinars and four (4) workshops, and prepare two (2) newsletters under this current performance period.</u>

The contractor shall provide logistics support for four (4) webinars, two (2) newsletters, and four (4) workshops under this current performance period ending June 30, 2019. The dates for these webinars, newsletters, and workshops are still to be determined.

<u>Webinar Support:</u>
The contractor shall assist EPA WACOR with:

1. **Pre-webinar**
   The contractor shall develop for each webinar the following materials:
   - Webinar announcement;

- Contact presenters and request short biography and presentation materials;
- Set up the Adobe webinar with agenda (provided by the EPA WACOR), and presentation materials.
- Set up and provide support for a webinar dry run with speakers.

The contractor shall provide the EPA WACOR with the above materials for review and approval. Based on the EPA WACOR's comments, through written technical direction, the contractor shall develop the Final Preliminary Agenda, Announcement and Pre-Registration.

The Final Preliminary Agenda, Announcement and Pre-Registration shall be QA/QC'd by the Contractor and reviewed by the EPA WACOR to assure accuracy of information and shall contain no typographical errors and sent electronically to all members and invited speakers.

The EPA WACOR will provide the contractor a list of items for the final agenda. The contractor shall format the final agenda for the meeting. The Contractor shall provide the EPA WACOR a draft of the agenda for review and approval. Based on the EPA WACOR's comments, the contractor shall develop the final agenda.

The final agenda shall be QA/QC'd by the contractor to assure accuracy of information and typographical errors.

2. **Webinar**
   The contractor shall provide logistics support throughout the webinar to:
   - Provide the logistics at the beginning of the webinar;
   - Muting and unmuting the phone lines;
   - Record presentations and discussions for the post-meeting report.

3. **Post-webinar**
   - The contractor shall deliver a draft meeting summary which shall include transcript of audio-taping and the notes taken from the meeting. The EPA WACOR will review the draft summary and provide comments to the contractor. After incorporating the EPA WACOR's comments, the contractor shall distribute the draft meeting summary to the speakers for review before finalizing the meeting summary report. The contractor shall produce a final draft based on the EPA WACOR's and the speakers written comments. The contractor shall send a copy of the final draft electronically, in the format specified, to the EPA WACOR. After receiving comments from the EPA WACOR, the contractor shall finalize the Meeting Summary Report. The summary reports shall be 508 compliant

Newsletter Support:

4. The contractor shall provide support to the EPA WACOR with developing two (2) 508-compliant newsletters. The contractor shall develop draft summaries and include information provided by webinar speakers, states, tribes, and EPA in the newsletter. The contractor will submit several interim drafts (frequency to be determined in consultation with the EPA WACOR) and a draft final version of the MS version of the newsletter for EPA review. Once

given direction from EPA that the MS Word version of the newsletter is final, the contractor will convert the MS Word document to a 508-compliant PDF file.

Workshop Support:

The contractor shall assist EPA WACOR with:

5. **Pre-workshop**
   - The contractor shall contact non-federal speakers and coordinate their travel arrangements (hotel and air travel). The contractor shall provide EPA WACOR rough estimates for approval before contacting speakers.
   - Hotel arrangements shall be done with the hotel chosen by the Workshop organizers, and the airfare shall be done by the most direct and least expensive economy class airfare.
   - The EPA WACOR will provide workshop materials such as Agenda, workshop information sheet, list of participants and presenter biographies, resource list and evaluation form) for printing and package preparation.
   - The contractor shall send via email the workshop materials to the EPA Regional representative or meeting location.
   - The contractor shall develop discussion questions and other meeting preparation materials for EPA WACOR approval; upon EPA WACOR approval, the contractor will distribute these materials to meeting attendees.
   - The contractor shall provide meeting facilitation support.
   - The contractor shall assist with mailing any materials as appropriate

6. **Workshop**
   - The contractor shall provide technical support for speakers presenting online (through Adobe webinar), as stated above.
   - The contractor shall deliver a draft meeting summary notes taken from the meeting that includes responses to discussion questions, attendee biographies, and presentations as applicable. The EPA WACOR shall review the draft summary and provide comments to the contractor. After incorporating the EPA WACOR's comments, the contractor shall distribute the draft meeting summary to the speakers for review before finalizing the meeting summary report. The contractor shall produce a final draft based on the EPA WACOR's and the speakers written comments. The contractor shall send a copy of the final draft electronically, in the format specified, to the EPA WACOR. After receiving comments from the EPA WACOR, the contractor shall finalize the Meeting Summary Report. The summary report shall be 508 compliant.

E. SCHEDULE OF BENCHMARKS & DELIVERABLES:

Task/ Subtask	DELIVERABLE	Schedule
1	**Work Plan**	As per Contract EP-C-14-016 requirements

2.1	**Information Quality Guidelines & Information Quality Review**	Due as requested by the EPA WA-COR via written technical direction
3.F	**Criteria Documents for 24 Contaminants**	Due as requested by the EPA WA-COR via written technical direction
3.F.1	**Draft BAFs**	Due as requested by the EPA WA-COR via written technical direction
3.F.1	**Final BAFs**	Due as requested by the EPA WA-COR via written technical direction
4	**Presentations and Follow-up Materials**	Due as requested by the EPA WA-COR via written technical direction
5	**Communication Strategies**	Due as requested by the EPA WA-COR via written technical direction
5.1	**Webinar and Workshop support**	TBD

Draft written deliverable(s) for review by the EPA WACOR shall be prepared in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables.

Final written deliverable(s) shall be furnished in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables, after written comments are received from the EPA WACOR.

TRAVEL: Some travel is anticipated under this work assignment. For cost estimate purposes, assume three one-day trips for one person from contractor location to any site nationwide (use trip to Florida to generate estimate) as identified by the EPA WACOR, with site visit schedules arranged to minimize travel time. All travel under this WA shall be in compliance with contract requirements.

PRINTING
All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

CONTRACTOR IDENTIFICATION
Contractor personnel shall clearly identify corporate affiliation at the start of any meeting or training workshop. While attending EPA-sponsored meetings, conferences, symposia, etc., or while on a Government site, Contractor personnel shall wear a badge that identifies the individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of the Agency meetings, conferences, symposia, etc.

MEETINGS, CONFERENCES, TRANINING EVENTS, AWARD CEREMONIES AND RECEPTIONS
All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA Contract Level COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA Contract Level COR.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-19

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Technical Support to Assess

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	4, 5, 6, 10, 12, 13, 14

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/21/2018 To 06/30/2019

Comments:
Technical Support to Assess the Opportunities and Implications of Advanced and Emerging Monitoring Technologies on Assessing, Managing and Communicating Ecological and Human Health Impacts

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		0
This Action:		726
Total:		726

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Luis Cruz (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1095 FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2036 FAX Number:

Performance Work Statement
EPA Contract EP-C-14-016
Work Assignment 4-19

I. TITLE: Technical Support to Assess the Opportunities and Implications of Advanced and Emerging Monitoring Technologies on Assessing, Managing and Communicating Ecological and Human Health Impacts of Contaminants in Water

II. WORK ASSIGNMENT CONTRACTING OFFICER REPRESENTATIVE (WACOR):

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III. PERFORMANCE PERIOD: Date of Issuance - June 30, 2019

IV. BACKGROUND:

Information and data about water quality is central to EPA's mission to protect and restore water resources, as guided by the Clean Water Act and Safe Drinking Water Act. This information is required for understanding the ecological and human health effects of pollutants or contaminants and in developing strategies and programs (e.g. water quality standards) that reduce risks to human health and the environment.

Traditionally, the measurement of water quality information has involved the collection of water samples in the field, and transport to a laboratory for subsequent water quality analysis. Often, the water quality analysis would take days or even weeks to obtain the results, thus limiting the timeliness of the data to inform management decisions by EPA, State or local public health authorities.

Yet monitoring technologies for the identification and quantification of pollutants in water are rapidly advancing. The surge in water quality sensor technology has a broad range of current and potential uses including environmental assessment, water quality standards development and assessment, citizen engagement, and regulatory compliance.

EPA's Water Technology and Innovation Blueprint (April 2014) frames the "market opportunity" for new monitoring technology:

> *Newer monitoring technologies, such as improved water quality sensor technology, remote sensing, and satellite imagery, hold opportunities to generate substantially more data at lower cost. New sensor technology coupled with improved telemetry and information technology can make data on water quantity and water quality available for a broader range of applications, such as water pollutant trading, treatment plant operations, resource and compliance targeting. Sensor and laboratory advances also provide opportunity for reducing the overall cost of water quality monitoring. New tools are being developed to store, communicate, analyze, and visualize the vast data streams.*

Considerable dialogue around these ideas is occurring within and external to EPA, including routine meetings of the Forum for Environmental Measurement (FEM), E-Enterprise efforts and the ORD-OECA Advanced Monitoring efforts. In this context, the Office of Water can and must address key technical, policy and regulatory issues related to advanced monitoring sensors, and continuous data.

EPA's Office of Water needs a clear and coordinated strategy to: 1) *characterize* the state of development of new water quality sensor technologies; 2) *consider* how this emerging technology can positively inform and negatively impact EPA's obligations to assess, manage and communicate the ecological and human health risks; 3) *assure* that appropriate and adequate procedures are in place to verify the results from new monitoring techniques; 4) *reconcile and integrate* the results of near-continuous monitoring with traditional discrete water quality data; and 5) *anticipate* external and internal EPA actions that warrant coordination.

This Work Assignment will perform a variety of specific subtasks to support the Office of Science and Technology, and the Office of Water more broadly, in the exploration and understanding of options and strategies related to remote, continuous, and sensor monitoring technologies. Specifically, this Work Assignment will provide contractor support for the Office of Water and Office of Science and Technology under Contract EP-C-14-016 in the following statement of work areas:

4. Technical guidance, report development, and general program analysis
5. Compilation and analysis of national and international environmental data
6. Development and application of methods
10. Workshops, conferences, training and logistical support
12. Public outreach and technology transfer
13. Compilation, categorization and summarization of comments; and
14. Preparation of presentation materials

Tasks outlined in this Work Assignment may build upon support provided through technical directions to the Contractor EP-C14-016, Work Assignment 2-03.

The level of effort of professional hours required to complete the tasks outlined in this Performance Work Statement is estimated to be 728 hours.

Quality Assurance:
The tasks in this work assignment require the use of secondary data. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall comply with Tetra Tech's Quality Management Plan for EPA Contract EP-C-14-016 (Tetra Tech, Inc., June 2014), as well as the EPA-approved Tetra Tech QAPP prepared for Contract EP-C-14-016. The purpose of the QAPP is to document Quality Assurance protocols in accordance with Office of Water Information Quality Guidelines: Pre-Dissemination Review Guidance and Checklists.

Some tasks in this Work Assignment may require the use of secondary data and shall be implemented in accordance with the approved quality assurance project plan (QAPP). No primary data creation is expected but if it happens the QAPP will be revised. The Contractor shall develop and submit a QAPP supplement and transmit the documentation to the Quality Assurance Officer, Contract Level COR and the EPA WACOR and will assure that the quality of the primary or secondary data and analyses are accurate and correct.

In addition to primary data creation, the Contractor shall discuss with the EPA WAM if any of the specific work assignment tasks are not readily covered under the QAPP. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a WA-specific QAPP supplement, which must be approved by the EPA before activities covered by the additional QA language begin under this work assignment.

For each final deliverable, the Contractor shall provide a statement that all QA procedures were followed, and a statement describing any needed changes to those procedures, if necessary. The Contractor shall also prepare a quality assurance documentation report when work is finished under this Work Assignment. This final QA statement detailing the QA/QC procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

Information Quality Guidelines:
The contractor shall ensure the products developed under this work assignment comply with the EPA Information Quality Guidelines (IQG) (www.epa.gov/quality/guidelines-ensuring-and-maximizing-quality-objectivity-utility-and-integrity-information. The contractor shall complete the OW IQG Checklist as needed for each deliverable from this work assignment as they may be used in Agency decision-making and/or will be publicly available documents. As requested by the WACOR, the contractor shall have a teleconference with the WACOR or EPA designated officer to discuss the Guidelines and the contractor's role in completing the OW IQG checklist. The WACOR will provide the checklist to the contractor. At the end of the work assignment, the contractor shall provide a memorandum describing how the planned product(s) developed meet the requirements of the OW's IQG checklist. As part of that memo, the contractor shall document the quality assurance procedures it used in developing the deliverables under this work assignment. The contractor shall provide the memo at the time it delivers the Final Summary Report.

V. STATEMENT OF WORK:

Task 0: Develop a Work Plan

The Contractor shall prepare a Work Plan in response to the Work Assignment Request for Work Assignment 3-19. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff.

The Contractor shall provide management and administrative support related to this Work Assignment throughout its duration. Such support shall include, but not be limited to, the following:

- Perform financial oversight and prepare progress reports for the Contractor Work Assignment Leader.
- Track progress toward completion of Work Assignment Tasks against costs and LOE.
- Perform quality assurance checks of products produced by the Contractor staff.
- Resolve internal (Contractor) problems associated with completion of tasks or costs.
- Resolve external (Contractor and EPA) problems associated with completion of tasks or costs, to include conference calls and meetings with EPA.
- Prepare monthly progress reports for EPA.

Task 1: Kickoff Meeting and Monthly Progress Reports

The Contractor shall participate in a Work Assignment kickoff meeting with EPA staff in person within five days of Work Assignment award. The purpose of the kickoff meeting is to discuss and clarify expectations, answer any questions, and identify and resolve any potential problems. The kickoff meeting shall include discussion of the key staff who could be involved in the individual tasks and any specific expertise they could provide to the types of work described in each task.

The purpose of the kickoff meeting is not to change any terms and conditions of the Work Assignment and kickoff meeting participants will not take action that in any way alters the Work Assignment. The Contractor shall provide notes from the kickoff meeting to the Work Assignment COR (WACOR) or person(s) designated by the WACOR within two business days.

Task 2: Prepare a Report on the State of the Science

The report will be based on research conducted under previous performance periods and will focus on summarizing the findings, assessments, and analysis of the information collected. This task involves framing and describing the overarching context, business case, and implications (positive and negative) of a new realm of water quality sensors that provide verifiable and accurate data on pollutants/contaminants that pose ecological and human health risks. Accompanying materials to be developed include a PowerPoint presentation and briefing

document. The report shall include 1) current and future uses of remote/continuous/sensor monitoring technologies; 2) technical, regulatory and policy issues of remote/continuous/sensor monitoring technologies; 3) options and strategies of remote/continuous/sensor monitoring technologies; and the current state of science of remote/continuous/sensor monitoring technologies for nutrients in water.

A. Identify the current and future potential uses of Remote/Continuous/Sensor Monitoring Technologies in the water sphere, specifically as they relate to OW and the National Water Program. The contractor shall identify and describe the types and attributes of different existing uses of remote/continuous/sensor monitoring (literature reviews, web-based searches, permit compliance, routine data collection, research, and discussions with experts in this field).

B. Identify the Spectrum of Technical, Regulatory, Policy Issues. The contractor shall identify and outline opportunities, barriers to and incentives for remote, continuous, and sensor monitoring technologies for applicable to the National Water Program. In addition, the contractor shall review an existing outline in order to identify and frame responses to the issues that are presented by the proliferation of remote, continuous, and sensor monitoring technologies for the Office of Water. The contractor shall identify opportunities for streamlined implementation and pilot opportunities to increase the Office of Water's understanding of the technology and data.

C. Support the Development of Options and Strategies for Assessing and Validating Remote, Continuous, and Sensor Monitoring Technologies for Water. The Contractor shall assist EPA in identifying existing and potential approaches and strategies to assess and validate emerging sensor and continuous monitoring technologies.

Task 3: Provide Assessment of the Current State of the Science of Sensor Monitoring Technologies for Water.

The contractor shall summarize the assessment of the current state of the science of sensor technology conducted in previous performance periods. This assessment shall evaluate existing research literature, sensor initiatives, current sensor-based monitoring networks, academic initiatives and other sources to chronicle and effectively portray and display the state of sensors development for a range of uses and applications. The assessment shall also include information on the adoption and usage of common sensors and their applications, as well as emerging advanced monitoring technology and their related uses. Accompanying materials to be developed include a briefing document on the state of sensor technology.

Task 4: Support to Office of Water for the E Enterprise Leadership Council (EELC) Advanced Monitoring Effort

The Office of Enforcement and Compliance Assurance (OECA) is co-chairing an effort with the Environmental Commissioners of the States (ECOS) on a collaborative effort related to

Advanced Monitoring. There are five areas that the EELC is advancing where the contractor's support will be needed. The five EELC action areas are:

1. Options and Feasibility Analysis for Independent Third-Party Verification Program
2. Technology Scan, Screen and User Support, including development of data quality tiers
3. Data interpretation
4. Data standards
5. LEAN the Methods Programs (also see Task below)

The Contractor shall assist OW with participation in this effort by participating in meetings, preparing key background information, compiling issues and brief strategy papers and otherwise assisting the Office of Water to assure that its programmatic and policy interests are represented and considered. The WACOR will provide additional direction as needed.

Task 5: Provide Assessment of the Relevance and Applicability of QAPPs to Sensors
The contractor shall summarize their assessment and research of the relevance and applicability of QAPPs to sensors that was performed in previous performance periods. Collection of environmental monitoring data necessitates that a Quality Assurance Project Plan (QAPP) be in place to assure that the data and information collected follows an established plan that assures that the data is accurate, reproducible and reliable. QAPPs for the collection and analysis of traditional field sampling, chain of custody, analysis in the laboratory, and reporting of results are well known and understood. The essential elements and content of QAPPs for sensor-based monitoring are not well understood. The Contractor shall assist with:

- Understanding the nature of current QAPPs for sensor-based watershed programs and related efforts
- Identifying the critical elements of QAPPs for sensors
- Prepare a compare and contrast chart that shows the similar and different elements of traditional and sensor based monitoring

Task 6: Assist with supporting the Office of Water's participation in Internal and External Forums

A. The Contractor shall participate and support OW's involvement in the key meetings and forums, assisting the Office of Water with framing important and relevant internal or external dialogues related to remote, continuous, and sensor monitoring technologies. Information shall be summarized from these meetings. Support may include note-taking and providing detailed meeting summaries of such meetings/forums.
B. During the course of assisting with participation in Internal and External Forums, specific issues may arise that require investigation and analysis. The contractor shall support the analysis phase for **up to 2** issues as they arise and shall also support the documentation of the investigation or analysis.

Task 7: Work Assignment Close-Out

A. When the contractor reaches the 80% spending threshold they shall commence close-out activities for the work assignment. This shall include but isn't limited to: organizing all final and draft documents and materials prepared under this work assignment for all

option years, providing copies of any research that was conducted related to or on behalf of this work assignment, and anything that is considered property of EPA. The contractor shall seek guidance from the WACOR on the best manner to transfer the documents and information. The contractor shall transfer all of the materials and information in an organized manner prior to the official close-out of this work assignment.

B. Contractor shall prepare a final Quality Assurance Documentation Report/ Information Quality Guidelines Checklist to accompany as part of the closeout documentation for the WA.

VI. SCHEDULE OF DELIVERABLES:

Task/ Subtask	DELIVERABLE	Schedule
0	**Develop a Work Plan**	In accordance to contract requirements
1	**Kickoff Meeting Notes**	Due two business days after Kickoff Meeting
2	**State of the Science Draft report**	Due 4 weeks after Kickoff Meeting
	Final report	Due 2 weeks after receiving EPA comments and edits
	Draft PowerPoint	Due 2 weeks after submission of final report
	Final PowerPoint	Due 2 weeks after receiving EPA comments and edits
	Draft briefing	Due 2 weeks after submission of final report
	Final briefing	Due 2 weeks after receiving EPA comments and edits
	Draft Summary of Advanced Monitoring Technologies in the National Water Programs	Due as requested by WACOR in written technical direction
	Final Summary of Advanced Monitoring Technologies in the National Water Programs	Due 2 weeks after receiving EPA comments and edits

3	**Draft assessment: Current State of the Science of Sensor Monitoring Technologies for Water** **Final assessment**	Due 4 weeks after Kickoff Meeting Due 2 weeks after receiving EPA comments and edits
4	**Support documents and materials**	Due as requested by WACOR
5	**Draft assessment on Relevance and Applicability of QAPPs to Sensors** **Final assessment**	Due 8 weeks after Kickoff Meeting Due 2 weeks after receiving EPA comments and edits
6	**Support of Internal meetings and External forums** **Results of Analysis and Investigations**	Due as requested by the EPA WACOR in written technical direction Due within 1 week of request by the EPA WACOR
7a	**Transfer of all work assignment materials and information**	Shall begin at the 80% spending threshold and must be completed 14 days before the end of the performance period
7b	**Quality Assurance Documentation Report/ Information Quality Guidelines Checklist**	When work under this WA is finished

VII. Other Administrative

PRINTING
All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

CONTRACTOR IDENTIFICATION
The Contractor personnel shall clearly identify corporate affiliation at the start of any meeting or training workshop. While attending EPA-sponsored meetings, conferences, symposia, etc., or while on a Government site, the Contractor personnel shall wear a badge that identifies the individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of the Agency meetings, conferences, symposia, etc.

MEETINGS, CONFERENCES, TRANINING EVENTS, AWARD CEREMONIES AND RECEPTIONS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities including travel and expenses in support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, will be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses will not occur until this approval is obtained and provided by the EPA CL COR.

ATTACHMENT A

Office of Water
Information Quality Guidelines: Pre-Dissemination Review Guidance and Checklists

version 2.2 (January 10, 2003)

BACKGROUND

In order to comply with Section 515 of the Treasury and General Government Appropriations Act for FY 2002 (Public Law 106-554), the Office of Management and Budget developed guidelines that "provide policy and procedural guidance for ensuring and maximizing the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by Federal agencies."

In response to OMB's guidelines (FRL-7157-8, March 2002), EPA developed the *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency* (The Guidelines), which contains EPA's policy and procedural guidance for ensuring and maximizing the quality of the information we disseminate. "Quality" refers to objectivity, integrity, and utility.

The Guidelines also:
III. outline administrative mechanisms for EPA pre-dissemination review of information products
1.a. enable affected persons to file complaints regarding disseminated information that they believe to be noncompliant with EPA's Guidelines.

Implementation began ***October 1, 2002.***

For more information, visit http://www.epa.gov/oei/qualityguidelines/

In order to ensure that information meets The Guidelines, the following guidance and checklists should be used prior to dissemination.

OVERVIEW

1.b. What information is covered under The Guidelines?
IV. Is your organization in compliance with EPA's existing Quality System and Office of Water's Quality Management Plan?
What type of information do I have?
Do additional guidelines apply for externally gathered data?
Checklists for Pre-Dissemination Review
What are Requests for Correction and Requests for Reconsideration, and how does OW respond to them?

WHAT INFORMATION IS COVERED UNDER THE GUIDELINES?

These guidelines apply only to *information* EPA *disseminates* to the public.

What DO The Guidelines cover?

EPA prepares the information and distributes it to support or represent EPA's viewpoint, or to formulate or support a regulation, guidance, or other Agency decision or position.
EPA distributes information prepared or submitted by an outside party in a manner that reasonably suggests that EPA endorses or agrees with it.
EPA reviews and comments on information distributed by an outside party in a manner that indicates EPA is endorsing it, directs the outside party to disseminate it on EPA's behalf, or otherwise adopts or endorses it.

What DON'T The Guidelines cover?

Distribution of information for government employees
EPA response to FOIA, FACA, or similar legislation
Correspondence directed to individuals or persons
Information presented solely to Congress
Ephemeral information (press releases, fact sheets, press conferences)
Background information (published articles distributed by libraries, or other non-EPA endorsed distributions)
Information distributed by recipients of EPA grants, contracts, or cooperative agreements *unless* EPA adopts or endorses the information
Information in public filings, including information submitted to EPA, either voluntarily or under mandates/requirements
Distribution of information in judicial cases or administrative adjudication

IS YOUR ORGANIZATION IN COMPLIANCE WITH EPA'S EXISTING QUALITY SYSTEM AND OFFICE OF WATER'S QUALITY MANAGEMENT PLAN?

Many of EPA's current quality assurance practices fulfill much of EPA's Information Quality Guidelines. Examples of these policies are: Quality System, Peer Review, Action Development Process, Integrated Error Correction Process, Information Resources Management Manual, Risk Characterization Policy and Handbook, Program-Specific Policies, and EPA's Commitment to Continuous Improvement. EPA information disseminated to the pubic must meet EPA's already existing Quality System and other related policies. The Quality System utilizes a graded approach to establish quality criteria that are appropriate for the intended use of the information and the resources available. (The Quality System can be found in EPA Order 5360.1 A2, "Policy and Program Requirements for the Mandatory Agency-wide Quality System" and in the "EPA Quality Manual".)

The Quality System requires Agency organizations to:

Assign a quality assurance manager
Develop a Quality Management Plan
Conduct an annual assessment of the organization's quality system
Use a systematic planning process to develop acceptance or performance criteria prior to the initiation of all projects that involve environmental information collection and/or use
Develop Quality Assurance Project Plans for all applicable projects and tasks involving environmental data
Conduct an assessment of existing data, when used to support Agency decisions or other secondary purposes, to verify accuracy
Implement all Agency-wide Quality System components in all applicable EPA-funded extramural agreements
Provide appropriate training for all levels of management and staff

The Office of Water implements EPA's Quality System through its Quality Management Plan, approved by OEI in September 2001. Please refer to this document to ensure that the information you are disseminating complies with Office of Water quality assurance policies.

WHAT TYPE OF INFORMATION DO I HAVE?

Different quality standards apply to influential information, influential scientific risk assessment information, and non-influential information. The definitions of these three types of information are:

Influential: when the Agency can reasonably determine that dissemination of the information will have a clear and substantial impact on important public policies or private sector decisions. These include OMB economically significant actions, peer reviewed documents, top Agency policy documents, and other actions on a case-by-case basis. Influential information must meet a higher standard of quality: "reproducibility".

$ Reproducibility: providing enough information to allow the public to reproduce our analyses

Influential Scientific Risk Assessment: applies to all dissemination of information regarding human health, environmental, or safety risk assessments, *except* those conducted under the Safe Drinking Water Act, which will adhere to SDWA principles. Information is required to be accurate, reliable, and unbiased; it should also be comprehensive, informative, and understandable. The quality standard is "objectivity," and uses the following principles:

Information is accurate, reliable, and unbiased. This involves:
$ Best available science, which utilizes sound and objective scientific practices, and peer review when available
$ Data collection by accepted methods
# Presentation of information is consistent with the purpose of the information, is comprehensive, informative, and understandable. This means specifying:
$ each population addressed by the risk
$ expected risk or central estimate

$ upper-bound and lower-bound estimate of risk
$ significant uncertainties identified
$ peer reviewed studies known to the Administrator

Non-Influential: standard of quality is "transparency."
$ Transparency: the public can understand how conclusions were obtained on the information

DO ADDITIONAL GUIDELINES APPLY FOR EXTERNALLY GATHERED DATA?

Most external environmental data is within the scope of the Quality System. This includes literature, industry surveys, compilations from computerized databases and information systems, and results from computerized or mathematical models of environmental processes and conditions.

Regarding voluntarily submitted information, EPA will continue to work with States and other governments, the scientific and technical community, and other interested information providers to develop and publish criteria the EPA would use to assess this type of information.

Depending on your information, you need only fill out ONE of the following three checklists. Please forward the checklists to OW's Information Quality Guidelines Officer for approval and signature. The checklist must then be signed by your Division Director, and a copy sent to your Quality Assurance Officer. Please also note that outside entities may file Requests for Correction (i.e. complaints) to EPA, citing non-compliance with EPA's Information Quality Guidelines.

Note: OGWDW staff should send their completed checklists directly to their Division Directors. They should work with the OW IQ Guidelines Officer, as their projects and checklists are being developed.

Office of Water
Information Quality Guidelines Checklist for
Influential Information

Influential Information has or will have a clear and substantial impact on important public policies or private sector decisions. (Includes OMB economically significant actions, peer reviewed documents, top Agency policy documents, and other actions on a case-by-case basis.)

☐ The information to be disseminated is covered under The Guidelines.

☐ The information is in compliance with EPA's Quality System and other related policies.

☐ The information is in compliance with Office of Water's Quality Management Plan.

☐ The information is consistent with the OMB definition of "quality," meaning the information has a high level of objectivity, utility, and integrity.
☐ Objectivity: information is presented in an accurate, clear, complete, and unbiased manner, and as a matter of substance, is accurate, reliable, and unbiased.
☐ Integrity: the information cannot be compromised through corruption or falsification because it is secure from unauthorized access or revision.
☐ Utility: the information is useful to the intended users.

☐ The information meets "reproducibility" standard.
The information and its accompanying documentation has a higher degree of transparency regarding the following:
☐ The source of the data used
☐ The various assumptions employed
☐ The analytic methods applied
☐ The statistical procedures employed

_____ _____

Division Director's Signature & Date IQG Officer for OW Signature & Date
(Officer signature Not needed for OGWDW staff)

**If your information does not comply with any of these items, please attach brief explanation of any omissions. Please forward a copy of this document to your office's Quality Assurance Officer.

Office of Water
Information Quality Guidelines Checklist for
Influential Risk Assessment Information

Influential Scientific Risk Assessment Information has or will have a clear and substantial impact on important public policies or private sector decisions. (Includes OMB economically significant actions, peer reviewed documents, top Agency policy documents, and other actions on a case-by-case basis.)

☐ The information to be disseminated is covered under The Guidelines.

☐ The information is in compliance with EPA's Quality System and other related policies.

☐ The information is in compliance with Office of Water's Quality Management Plan.

☐ The information is consistent with the OMB definition of "quality," meaning the information has a high level of objectivity, utility, and integrity.
☐ Objectivity: information is presented in an accurate, clear, complete, and unbiased manner, and as a matter of substance, is accurate, reliable, and unbiased.
☐ Integrity: the information cannot be compromised through corruption or falsification because it is secure from unauthorized access or revision.
☐ Utility: the information is useful to the intended users.

☐ The information meets "objectivity" standard.
☐ The information is accurate, reliable, and unbiased:
-best available science and supporting studies conducted using sound and objective scientific practices, including peer reviewed studies
-data were collected by accepted methods or best available methods (if the method's reliability nature of the decision justifies the use of the data)
☐ Presentation of information on human health, safety, or environmental risks, consistent with the purpose of the information, is comprehensive, informative, and understandable. Each of the following must be specified:
-each population addressed by the risk or each risk assessment endpoint addressed by any estimate of applicable ecological risk
-expected risk or central estimate for the specific populations affected or the ecological assessment endpoints
-upper-bound and lower-bound estimate of risk
-significant uncertainties identified, and studies that would assist in resolving uncertainties
-peer reviewed studies known to the Administrator that support, are directly relevant to, or fail to support any estimate of risk and the methodology used to reconcile inconsistencies in the scientific data

Division Director's Signature & Date IQG Officer for OW Signature & Date (Officer signature Not needed for OGWDW staff)

**If your information does not comply with any of these items, please attach brief explanation of any omissions. Please forward a copy of this document to your office's Quality Assurance Officer.

Office of Water
Information Quality Guidelines Checklist for
Non-Influential Information

☐ The information to be disseminated is covered under The Guidelines.

☐ The information is in compliance with EPA's Quality System and other related policies.

☐ The information is in compliance with Office of Water's Quality Management Plan.

☐ The information is consistent with the OMB definition of "quality," meaning the information has a high level of objectivity, utility, and integrity.
☐ Objectivity: information is presented in an accurate, clear, complete, and unbiased manner, and as a matter of substance, is accurate, reliable, and unbiased.
☐ Integrity: the information cannot be compromised through corruption or falsification because it is secure from unauthorized access or revision.
☐ Utility: the information is useful to the intended users.

☐ Meets "transparency" quality standard: the public can understand the source of the information and how conclusions were reached on the information.

Division Director's Signature & Date IQG Officer for OW Signature & Date (Officer signature Not needed for OGWDW staff)

**If your information does not comply with any of these items, please attach brief explanation of any omissions. Please forward a copy of this document to your office's Quality Assurance Officer.

Helpful information for Completing OW IQG Checklists

(1) The information is in compliance with EPA's Quality System and other related policies.

Of specific interest:

$ EPA INFORMATION QUALITY GUIDELINES

$ EPA PEER REVIEW POLICY:

Is this product a major product under the Agency's peer Review Policy? Described in the *Science Policy Council Peer Review Handbook,* the EPA Peer Review Policy regards major scientific and technical work products as those that have a major impact, involve precedential, novel, and/or controversial issues, or the Agency has a legal and/or statutory obligation to conduct a peer review.

If so, has it undergone appropriate peer review? Or, is your AA-ship or Region able to articulate why peer review was not conducted?

$ EPA QUALITY SYSTEM:

Does this product present or use environmental data?

$ If so, did this product complete a **Quality Assurance Project Plan (QAPP)** or equivalent document(s) for all applicable projects and tasks involving environmental data?

$ Did this product conduct **an assessment of existing data,** when used to support Agency decisions or other secondary purposes, to verify that they are of sufficient quantity and adequate quality for their intended use?

$ EPA RISK CHARACTERIZATION POLICY AND HANDBOOK, AND OTHER RISK POLICIES

$ The EPA Risk Characterization Policy and Handbook provide guidance for risk characterization that is designed to ensure that critical information from each stage of a risk assessment is used in forming conclusions about risk. The Policy calls for a transparent process and products that are clear, consistent and reasonable. The Handbook is designed to provide risk assessors, risk managers, and other decision-makers an understanding of the goals and principles of risk characterization.

(2) Ensuring transparency:

Currently, the EPA IQGs do not describe in great detail how EPA intends to ensure transparency and what exactly transparency consists of but rather state in a general sense EPA's renewed commitment to information transparency for all information products.

The Office of Environmental Information recommends inclusion of the following 5 basic elements in an information product that is being released to the public. This

information should be easy to find within a product.

1. Purpose — information products should clearly state the purpose of the product itself. The product should also include a discussion of the intended audience, why the product was created, and an overview of the analysis behind and/or information within the product.

2. Explanation of Potential Uses — information products should provide explanations of how the various types of information and/or analyses presented in the product can used. Each information product should clearly convey why the product was developed (i.e., what its intended use is). This will help users ascertain product quality as it suits their own needs.

3. Product content: Inputs, Methodology, and Outputs — the product should clearly explain to product users the sources of data used to develop the information product (inputs), the scope of the analysis and how the information was put together (methodology), and the information that is made uniquely available through the information product (outputs).

4. Product Limitations and Caveats — a product should clearly state the strengths and weaknesses of the information product, and the accuracy of the source data used for its intended use. In addition, the metadata should also discuss the implications of data quality on the product itself. Furthermore, this where a product developer should be informing the user of the origins of the data and the quality considerations associated with secondary use. The product should describe the difference between why the data was initially collected and how such quality considerations are accommodated in the most recent use by EPA in this new product.

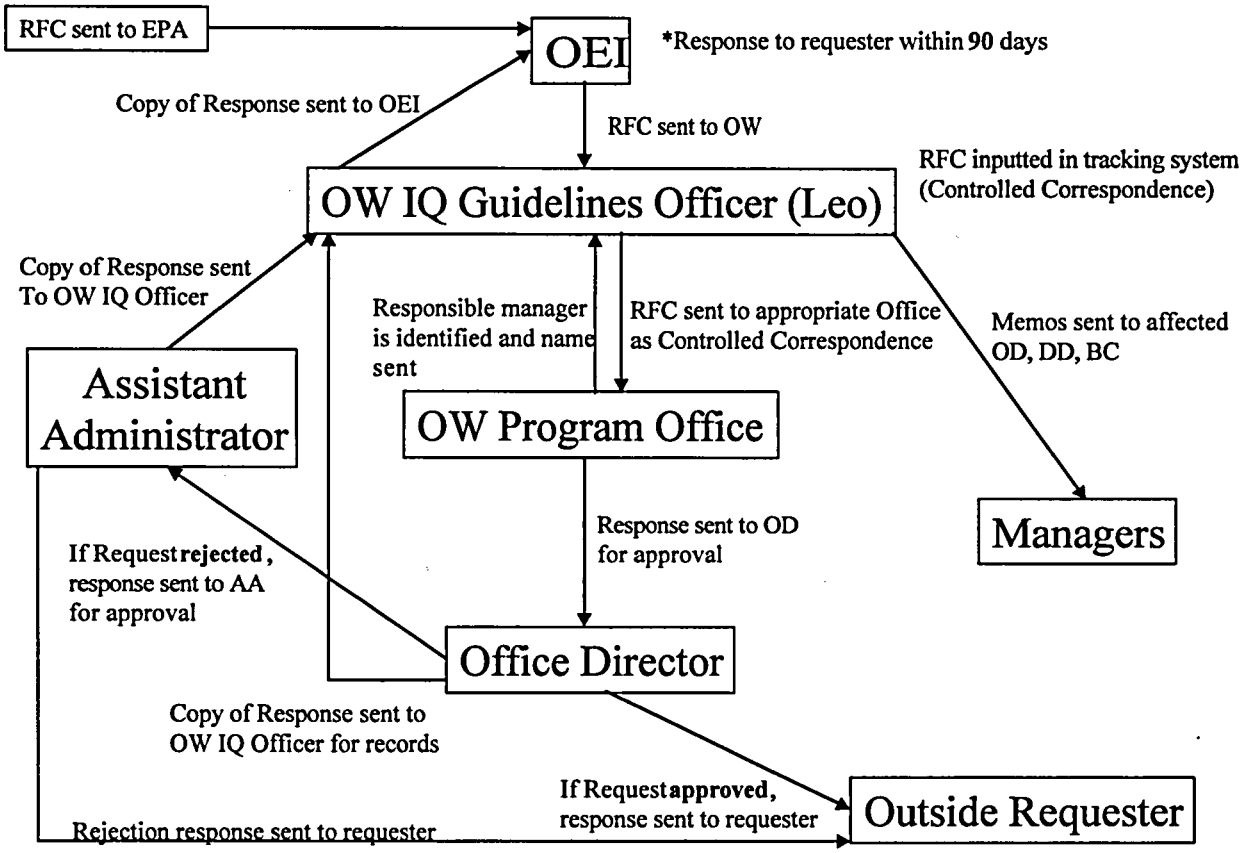
5. Contact information — the information product should explain users with basic contact information. Products should let users know who is responsible for the product and whom they can contact to obtain more information and/or obtain answers to questions they may have on the product or any analyses presented in the product. This is also important in case the user wishes to submit a Request for Correction or later a Request for Reconsideration. The user should be able to tell which Program and/or Region the product came from.

WHAT ARE REQUESTS FOR CORRECTION AND REQUESTS FOR RECONSIDERATION, AND HOW DOES OW RESPOND TO THEM?

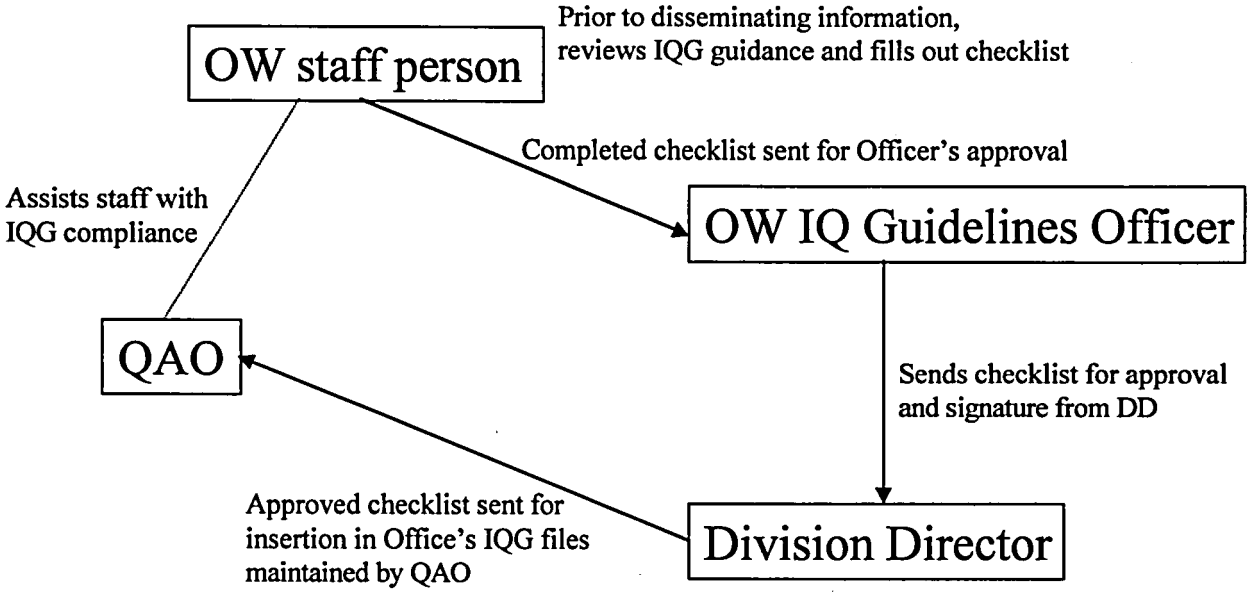
The public and outside entities may send complaints to the Office of Environmental Information, stating that EPA information does not comply with OMB's or EPA's Information Quality Guidelines. These complaints are called Requests for Corrections (RFC). These requests should include contact information of the requester, a description of the EPA information in question, an explanation of how the information does not comply with the Guidelines, a recommendation for corrective action, and an explanation of how the alleged error affects or how a correction would benefit the requester.

When an RFC is received by OEI, they will send the RFC to OW, if the information in question is under our jurisdiction. OEI will send the RFC to OW's IQ Guidelines Officer who will then prepare a controlled correspondence to the Office, who has disseminated the information. In addition, a memo will be sent to managers informing them of the Request. The OW Program Office will be responsible for crafting a response. If the response is an approval, the Office Director may sign the response and send it to the requester of the correction. In addition, a copy should be sent to OW's IQ Guidelines Officer. If the response is a disapproval, the response should be sent to the Assistant Administrator for concurrence on the decision. After AA concurrence, the response will be sent to the outside requester, with a copy to OW's IQ Guidelines Officer. OW has 90 days to respond to requester. If additional time is needed for making a decision on an RFC, OW must send requester a letter informing them that OW is currently processing their request. Please see OW RFC Process Diagram.

OW Request for Correction (RFC) Process



OW Pre-Dissemination Review Process



Note: **OGWDW staff should send checklists to Division Director directly. OGWDW staff may contact IQ Guidelines Officer, as information products and checklists are being developed.*

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-22

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	WPD NPDES WQ Technical Support

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	1.1,1.3,2.0,3.2,3.3,3.4,3.5,3.6,3.10,3.12,3.14,5.1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 08/05/2014 To 06/30/2019		0
This Action:		575
Total:		575

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Laura Phillips (Signature) (Date)	Branch/Mail Code:	
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PERFORMANCE WORK STATEMENT
CONTRACT EP-C-14-016
WORK ASSIGNMENT 4-22

TITLE: Water Permits Division (WPD) National Pollutant Discharge Elimination System (NPDES) Water Quality (WQ) Technical Support.

1. WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

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2. PERIOD OF PERFORMANCE: July 1, 2018 through June 30, 2019

3. BACKGROUND INFORMATION: The tasks under this work assignment are continued work from a previous FY18 work assignment (WA) 3-22 under this contract EP-C-14-016. The Water Permits Division (WPD), within the Office of Wastewater Management (OWM),

is responsible for the development and implementation of the National Pollutant Discharge Elimination System (NPDES) permits program. This program regulates point source discharges of pollutants to surface waters of the United States. The Clean Water Act (CWA) and other relevant Federal statutes provide the statutory authority and basis for the NPDES permits program. The appropriate implementation of new or revised EPA criteria and State water quality standards (WQS) under the NPDES permits program is critically important for compliance with EPA's NPDES regulations and the goals of the CWA. Therefore, development of NPDES permits program water quality (WQ) guidance, providing technical support and providing NPDES training to EPA Regions/States (i.e., for WET) are an important part of the NPDES program mission.

4. PERFORMANCE WORK STATEMENT (PWS):

TASK 0 (Contract PWS General): Work Plan, Monthly Progress Reports and Quality Assurance Project Plan Development or Revision (as necessary). EPA estimates 40 Level of Effort (LOE) hours will be required to support the administration of the work assignment and the QAPP. The contractor shall develop a work plan in accordance with the contract requirements. The contractor's work plan shall include a schedule, staffing plan, level of effort (LOE), and a cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. Monthly progress reports submitted with monthly invoice are required under this task and shall include: the monthly progress for each task and a break out of the respective LOE hours and cost for each task in this work assignment. Also the contractor shall provide the LOE hours expended for the development and revision of the Quality Assurance Project Plan (QAPP) for this work assignment and the LOE each month for any QAPP activities for tasks 1, 3 and 4. The QAPP for WA 4-22 can be an update of the previous QAPP from WA 3-22.

Task 1 (Contract PWS 1.1, 1.3, 2.0, 3.2, 3.3, 3.4, 3.5, 3.6, 3.10, 3.12, 3.14, 5.1, 5.7): EPA NPDES WET Program and Regional Whole Effluent Toxicity (WET) Technical Support. Task 1 includes two Subtasks. Subtask 1 is to provide NPDES WET technical and national programmatic support to EPA HQ and its ten Regions. Subtask 2 is to provide NPDES WET technical support on a joint EPA Water Permits Division (WPD) and EPA R8 NPDES WET discharge monitoring report (DMR) test data project. EPA estimates a total of 127 LOE hours will be required for Subtasks 1 and 2 under Task 1.

Subtask 1: NPDES WET National Program (67 LOE)

The contractor shall provide NPDES WET permit programmatic and technical support to EPA HQ and its ten EPA Regions for questions or topic areas concerning EPA Regional, State and Tribal NPDES WET permits program implementation. Some NPDES WET program implementation topic area examples include: reasonable potential (RP) determinations, independent applicability, integrated criteria, EPA WET test methods, WET data evaluation, WET data statistical analysis and interpretation, calculations, total dissolved solids, testing high saline effluent samples, pathogen interference, WET test species selection and sensitivity; monitoring approaches including frequency; and Toxicity Identification Evaluations/Toxicity

Reduction Evaluations (TIEs/TREs). EPA estimates there will be two pages of questions or comments on NPDES WET issues from EPA Regions such as R4 or R6 which will be provided to the contractor by the EPA WACOR. The contractor shall provide, if requested by the EPA WACOR through a written technical direction, technical support on questions concerning RP determinations for toxics (chemical pollutants) too.

In addition, EPA through written technical direction to the contractor may identify NPDES WET technical questions on EPA Regional and/or state RP NPDES WET implementation procedures (IP). EPA estimates up to two pages total from various states' draft permit quality review (PQR) reports that the EPA WACOR will identify thru written technical direction to the contractor for a technical review of WET or toxics issues.

For planning purposes, for all technical support requested by the EPA WACOR under this task, the contractor shall assume there may be up to two one-hour conference calls using EPA's conference call lines.

Subtask 1 NPDES WET National Program Deliverables: The contractor shall provide technical support to EPA on NPDES WET permits program based on questions or issues provided by the EPA WACOR to the contractor. For planning purposes, the contractor shall assume that the deliverables are due to the EPA WACOR within one week after the EPA WACOR's written technical direction to initiate work.

Subtask 2: EPA WPD and R8 NPDES WET DMR Test Data Project (60 L0E)

This subtask is in support of a joint project between EPA HQ's Water Permits Division (WPD) and staff from EPA's Region 8 permits office. All direction to the contractor will only come from the EPA HQ WPD WACOR including all emails and other written or verbal communication (which will be reduced to writing within 5 days). The EPA WACOR will communicate and coordinate with both EPA HQ WPD staff and EPA Region 8 staff. The contractor shall provide EPA WET test methods expert technical support for this joint project through the EPA WACOR when identifying and confirming EPA WET test methods and test species associated with EPA NPDES WET discharge monitoring reporting (DMR) codes within EPA's Integrated Compliance Information System (ICIS). No entry into ICIS will be required by the contractor. The contractor shall only provide EPA WET test method technical support in reviewing NPDES WET test DMR data selected by the EPA WACOR which was entered into ICIS by NPDES states. The EPA WACOR will provide to the contractor ICIS NPDES WET DMR test data printouts used in determining which codes entered by states are for the same WET test method and/or test species (duplications) or in error (incorrect code for WET test method or test species). The overall goal for this EPA project is to identify what is needed to accurately streamline the current approaches used by NPDES states when entering WET test DMR data into EPA's ICIS so that there is no longer duplicative, incorrect, and inconsistent entry of DMR WET test data into ICIS so that DMR WET test data can be more successfully shared and compared across states nationwide.

Subtask 2 NPDES WET National Program Deliverables: The contractor shall provide technical support to EPA on questions concerning discharge monitoring reporting of NPDES WET data by NPDES states as part of a joint project between EPA WPD/OWM and EPA Region 8. The EPA WACOR will provide the necessary information, ICIS data printouts and the questions to be addressed to the contractor. For planning purposes, the contractor shall assume that the deliverables are due to the EPA WACOR within up to three weeks depending on the size and complexity of the NPDES WET DMR test data printouts and associated questions to address and after receiving the EPA WACOR's written technical direction to initiate work.

Task 2 (Contract PWS 1.1, 1.3, 2.0, 3.2, 3.3, 3.4, 3.5, 3.6, 3.10, 3.12, 3.14, 5.1, 5.7): EPA HQ NPDES WET Training Courses Support. Task 2 is for EPA HQ training courses provided to EPA Regional, NPDES State and Tribal government employees who are NPDES permit writers or who work with permit writers on developing permits for industrial and municipal facilities under the NPDES WET permits program. EPA estimates 157 LOE hours will be required for this task.

The contractor shall provide technical support and expertise in providing two confirmed EPA HQ national WET training courses: (1) EPA Region 3 (R3) Course at Pennsylvania's (PA) Department of Environmental Protection (DEP) office in Harrisburg, PA from August 28-29, 2018; and a Region 1 (R1) course which shall take place in Chelmsford, MA at the EPA Region 1 laboratory from October 16-18, 2018. A third course is pending for EPA Region 5, their states and tribes for after January 2019 in the EPA Region 5 Chicago, Illinois office and if additional funding is identified by EPA HQ then the EPA WACOR will do a WA amendment to provide LOE for this third pending course. However, if there are remaining funds from the first two courses for R1 and R3 then some initial course preparation work may be started through a written technical direction by the EPA WACOR for the Region 5 course.

The contractor shall provide two technical NPDES WET experts for the two confirmed courses working with the EPA WACOR to deliver each of these courses. The courses shall be provided to EPA Regional NPDES permits employees and their NPDES state and/or tribal government representatives during a two and half day course (eight hours/full day) for the Region 1 course and two full days and the third day ending at 12:30 PM for the Region 3 course. The morning of the first half day may also include a NPDES WET technical discussion with each of the respective Regional and/or state host for each of the respective courses prior to the course starting the afternoon of the first day. The contractor shall use existing EPA Headquarters NPDES WET training course materials previously developed with the EPA WACOR under a previous Tetra Tech, Inc. contract with EPA WPD/OWM. The EPA WACOR working with each of the respective EPA Regional NPDES WET coordinator(s) for each respective course may direct the contractor to make a few minor course modifications to incorporate some of the Regional, state or tribal permitting program relevant information into the existing course materials (i.e., Regional, state or tribal permit examples, TIE/TRE case examples, WET laboratory result sheets for the WET test data review class exercises). There shall be biweekly or monthly conference calls that can last from fifteen minutes up to an hour using EPA HQ conference lines with the respective EPA Region for each of the respective planned courses for course planning and preparations. The EPA WACOR and the respective EPA Regional office or

their designated contact will make all the training course logistical arrangements including registration of course attendees and complete possibly some of the administrative tasks (i.e., name tags). EPA will print, assemble and ship the course books. The contractor shall provide to the EPA WACOR the final electronic files set up for EPA to print the course books. The contractor shall provide at the course a WET test species display and possibly for the Region1 course a modified acute WET test demonstration as part of the course class activities.

Task 2 Deliverables: The contractor shall provide technical expert support to EPA on providing two NPDES WET courses to EPA Regional, State, and Tribal government employees in the respective EPA Regions where the courses shall be provided. The contractor shall provide either one or possibly two technical NPDES WET experts, (as requested through the EPA WACOR's PWS for each course or written technical direction), who shall support EPA in delivering a NPDES WET national training course. Also, there may be a NPDES WET technical discussion with the respective EPA Regional and/or State host for each training course in the morning before the course begins in the afternoon. The contractor may be asked to slightly modify EPA's HQ NPDES WET course to incorporate each course's respective Regional and states' reference information. The two courses currently confirmed are: a R3 course which shall take place at Pennsylvania's (PA) DEP office in Harrisburg, PA from August 28-29, 2018; and a R1 course which shall take place in Chelmsford, MA at the EPA Region 1 laboratory from October 16-18, 2018. Course planning and materials preparation for the two confirmed courses for R1 and R3 was initiated under the previous WA3-22 and will continue under WA4-22 as of July 1, 2018. For planning purposes, the contractor shall send by email the final course book and any other materials to the EPA WACOR by or before four weeks prior to the dates of each course for reproduction by the EPA print office or for smaller copy jobs by the EPA WACOR. Other specific instructions for preparing for and delivering each course will be provided by the EPA WACOR through a written technical direction emailed to the contractor.

TASK 3: (Contract PWS 1.1, 1.3, 2.0, 3.2, 3.3, 3.4, 3.5, 3.6, 3.14): Expert Technical Support on Whole Effluent Toxicity (WET) Test Methods and WET Test Data Statistical Analysis Approaches. EPA estimates a total of 83 LOE hours will be required for both Subtasks 1 and 2 under Task 3.

Subtask 1*: *Expert Technical Support for NPDES WET Implementation Challenges. (60 LOE)
EPA HQ is coordinating primarily with two EPA Headquarter offices to review and respond to ongoing stakeholder challenges concerning the implementation of WET under the NPDES permits program with respect to the statistical analysis of WET test data. The two HQ offices are the Office of General Counsel (OGC) and the Engineering and Analytical Support (EAS) Branch of the Engineering and Analysis Division (EAD) in the Office of Science and Technology (OST) located in Washington, D.C. The work under this Task is a continuation of work done under the previous WA 3-22 and contract EP-C-14-016 for an existing EPA NPDES WET Region 9 litigation unless EPA gets a favorable court decision for EPA which would completely end the existing litigation (which if it happens the EPA WACOR will notify the contractor in a written technical direction as quickly as possible).

This task was designed to provide specific expert technical support with respect to EPA's WET test methods, approaches to analyzing WET test data (statistically) and the review of laboratory WET test data analytical reports. The EPA WACOR may direct the contractor to provide expert WET support to provide draft recommendations to EPA to answer WET technical questions about EPA's freshwater and/or saltwater EPA WET test methods and including especially explaining various statistical approaches for analyzing WET test data.

In addition, the EPA WACOR through written technical direction may direct the contractor to provide expert WET technical support to:

- Answer questions on the differences between point estimate and hypothesis test statistical approaches when evaluating valid WET test data as described in EPA's WET test methods or based on EPA Regional or NPDES state permitting approaches. Under this same context of NPDES WET permit program implementation the contractor may need to technically differentiate between the various WET test endpoints for either or both acute and chronic measurements of toxicity (e.g., LC50, IC25, NOEC, etc.) and information in Table 1A of EPA's WET test methods.

- Review up to 2 pages of (either or combination of):

    - EPA draft document language prepared by the OGC for scientific technical correctness only (i.e., WET test methods consistency, correct description of statistical approaches and applications); and/or
    - Incoming language or parts of documents that the OGC needs to technically evaluate with respect to EPA's WET test methods and recommended statistical approaches for evaluating WET test data. For example, the contractor shall provide expert WET technical support to OGC on challenges to the implementation of the NPDES WET permits program including complex technical arguments regarding the analysis of WET test data (statistical approaches) used for making RP determinations and requiring WET water quality-based effluent limits (WQBELs). The contractor shall provide expert technical support in reviewing incoming language (i.e., documents, excerpts from documents) sent to EPA challenging the NPDES WET permits program and/or drafting for EPA's review draft responses with respect to EPA's WET test methods or recommended WET test data analytical statistical approaches.

After OGC has reviewed the contractor's draft deliverables and provided review comments back to the contractor through the EPA WACOR the contractor shall revise the draft deliverables based on the EPA comments received within a time frame specified by the EPA WACOR.

There may be occasional local meetings at the EPA's Headquarters offices. All necessary documents, data, and reference materials will be provided to the contractor through the EPA WACOR by E-mail in electronic files (i.e., WORD, Excel, Complex Effluent Toxicity Information System [CETIS] WET test data reports) and/or as hard copies. The EPA WACOR will coordinate the requests for expert technical support using written technical direction

including the requested deliverable delivery date(s) concerning materials provided to the contractor for review and/or in arranging conference calls or meetings.

Subtask 1 Deliverables: Expert Technical Support for NPDES WET Implementation Challenges. The EPA WACOR will coordinate the requests for expert technical support using written technical directives including the requested deliverable delivery date(s) (usually within up to two weeks from receipt of materials unless a more urgent deadline is required) concerning the review of materials provided to the contractor for review and/or in arranging conference calls or meetings.

Subtask 2: Expert Technical Support for NPDES WET Test Data Interpretation and Laboratory Data Reporting. (23 LOE)

EPA has WET technical questions concerning WET data interpretation and laboratory data reporting some of which may cross over to NPDES WET permit implementation. EPA may need expert WET NPDES technical support to develop draft materials concerning possible complex WET test endpoints in response to data interpretation questions. The EPA WACOR through a technical direction may request from the contractor expert WET technical support to review complex technical questions, concerns, or points raised concerning WET test endpoints. Some of the WET technical points and questions include:

- How do WET point estimate test endpoints (e.g., IC_{25}) differ from hypothesis test endpoints? How important are confidence intervals? What effect does it have on the value of data if confidence intervals are not factored into data interpretation of valid WET data?
- What are the pros and cons of each type of WET test endpoint in the context of intra-laboratory data report variability?
- What are possible approaches for addressing within and between laboratory test variability? Include discussion of EPA's 2000 NPDES WET Variability Guidance.
- Does it matter if NPDES permit WET limit expressions and laboratory QA reports test endpoints are different? How or does this affect the NPDES permits program with respect to WET limits?

Subtask 2 Deliverables: Expert Technical Support for NPDES WET Test Data Interpretation and Laboratory Data Reporting. The contractor shall provide technical support to EPA on NPDES WET and/or toxics program implementation based on questions or issues provided by the EPA WACOR to the contractor. The contractor shall provide the following expert NPDES WET technical support to EPA: provide explanations on WET test endpoint statistical questions; review proposed technical points; and review WET test data. The EPA WACOR will provide one page of comments, questions, and other material for review. As requested by the EPA WACOR through a technical direction, there may be a one-hour call with the EPA WACOR and other EPA OW program staff to discuss comments, questions, and WET test endpoint(s) or other WET technical explanations. For planning purposes, there may be one meeting at EPA's HQ with the WACOR and other EPA offices such as OC and EAD to address outstanding technical questions and concerns concerning statistics and WET data interpretation. The contractor shall

send EPA draft deliverables for EPA's review within two weeks of the EPA WACOR's technical direction unless otherwise noted by the EPA WACOR.

TASK 4: (Contract PWS 1.1, 1.3, 2.0, 3.2, 3.3, 3.4, 3.5, 3.6, 3.14): EPA draft NPDES Whole Effluent Toxicity (WET) implementation frequently asked questions (FAQ) document. EPA estimates 168 LOE hours for this task.

This task is a continuation of work under the previous WA 3-22 under the same contract. EPA is requesting that the contractor provide expert technical support to develop a draft NPDES WET compendium of NPDES WET implementation frequently asked questions (FAQs) based from primarily existing draft materials EPA will provide to the contractor and also additional expert NPDES WET technical support from the contractor. EPA will provide several initial NPDES WET implementation issues EPA has based on discussions with EPA Regions and/or their states and will provide additional topics as they are identified. This task may involve the contractor participating in conference calls (using EPA conference call lines) to discuss possible revisions to existing FAQs and to incorporate new FAQs based on discussions, additional materials (e.g., R4 or R9 FAQs or other EPA references) provided by the EPA WACOR, and feedback from EPA Regions 1-10.

Once a draft NPDES WET implementation FAQs document has been developed it shall be circulated to the Water Permits Division/State and Regional Branch managers, the EPA Regions 1-10, the Office of General Counsel, other EPA HQ program offices that work with the Office of Wastewater Management's Water Permits Division and possibly EPA's Office of Research and Development (ORD) for review and comment. The contractor shall revise the draft FAQs document based on the comments received which shall be transmitted to the contractor from the EPA WACOR in a technical direction. The EPA WACOR will establish a deliverable schedule with the contractor once questions or materials are received from other EPA offices. The contractor shall revise the draft materials within up to four weeks of receiving EPA's review comments.

Task 4 Draft NPDES WET Implementation FAQs Deliverables: The contractor shall provide a consolidated draft NPDES WET implementation FAQs document by September 30, 2018. During the process of developing the draft FAQs the contractor shall provide a revised draft back to the EPA WACOR within two weeks of receiving EPA's review comments from the EPA WACOR.

5. QUALITY ASSURANCE (QA) STATEMENT (Contract PWS 4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6):

A Quality Assurance Project Plan (QAPP) may be required for Tasks 1, 3 and 4 but not for Tasks 0 and 2. Since the work requiring a QAPP is continued work from the previous work assignment 3-22 under the same contract, EP-C-14-016; the prior QAPP may be updated and revised pursuant to this work assignment 4-22. This approach will not only ensure consistency between work assignments but also minimize unnecessary expenditures by reusing those parts of the previous QAPP which are still applicable. All data-related

activities shall be conducted in accordance with the Office of Water Quality Management Plan (QMP). The contractor shall submit the revised QAPP within 15 days of the submittal of the work plan.

6. **SPECIAL REPORTING REQUIREMENTS:** Reports shall be submitted in accordance with the contract. In addition, the contractor shall immediately notify the EPA WACOR when 75% of the contract funding or labor hours have been utilized and shall not continue performing work beyond the established work assignment funding ceiling. The contractor shall track and provide to the WACOR in the monthly reports an accounting of all LOE hours and ODCs on QA activities for this work assignment. All text deliverables shall be compatible with the Microsoft Word currently used by the Water Permits Division and based on the EPA WACOR's direction will either be delivered in an electronic format (i.e., CD) or emailed to the EPA WACOR. Deliverables which shall be released to the public shall be 508 compliant. The contractor shall provide monthly status reports to the WACOR via phone or E-mail and attend periodic status meetings via conference lines set up by EPA WACOR. The contractor shall not release information or comments on works performed under this work assignment without the WACOR's prior written authorization. Wherever practicable, all written materials submitted to EPA shall be doubled-sided and on recycled paper. All computer disks and DVDs submitted to the EPA WACOR shall be scanned for, and identified as free from viruses. The contractor shall submit drafts and final products in hard copy as well as on the appropriate size disk in a format compatible with Water Permits Division hardware.

7. **RESOURCE ESTIMATES (LOE):**

   EPA estimates 575 LOE hours shall be required to complete the work under this work assignment.

8. **GOVERNMENT RESPONSIBILITIES:**

   The WACOR will continue to provide to the contractor necessary information or documents required by the contractor to perform tasks under the current work assignment, especially for the information or documents specifically referenced under Tasks 1-4 as being provided to the contractor as existing EPA materials.

10. **SURVEILLANCE PLAN:** *(discussed in the contract).*

9. **CONFERENCE/MEETING GUIDELINES AND LIMITATIONS.**

   The contractor shall immediately alert the EPA WACOR to any anticipated event under the work assignment which may result in incurring an estimated $20,000 or more cost, funded by EPA, specific to that event, meeting, training, etc. Those costs would include travel of both prime and consultant personnel, planning and facilitation costs, AV and rental of venue costs, etc. The EPA WACOR will then prepare approval internal paperwork for the event and will

advise the contractor when appropriate signatures have been obtained. At that point, effort can proceed for the event. If the event is being sponsored by another EPA organization, the organization providing the planning is responsible for the approval.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-22

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	WPD NPDES WQ Technical Support

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	1.1,1.3,2.0,3.2,3.3,3.4,3.5,3.6,3.10,3.12,3.14,5.1

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 08/05/2014 To 06/30/2019		575
This Action:		246
Total:		821

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Laura Phillips (Signature) (Date)		Branch/Mail Code:
		Phone Number: 202-564-0741
		FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)		Branch/Mail Code:
		Phone Number: 202-564-3133
		FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code:
		Phone Number:
		FAX Number:
Contracting Official Name: Angela Lower (Signature) (Date)		Branch/Mail Code:
		Phone Number: 513-487-2036
		FAX Number:

PERFORMANCE WORK STATEMENT
CONTRACT EP-C-14-016
WORK ASSIGNMENT 4-22, Amendment One

TITLE: Water Permits Division (WPD) National Pollutant Discharge Elimination System (NPDES) Water Quality (WQ) Technical Support.

1. WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

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2. PERIOD OF PERFORMANCE: July 1, 2018 through June 30, 2019

3. BACKGROUND INFORMATION: The tasks under this work assignment amendment one is continued work from the existing work assignment (WA) 4-22 under this contract EP-C-14-016.

4. PERFORMANCE WORK STATEMENT (PWS):

TASK 0 (Contract PWS General): Work Plan, Monthly Progress Reports and Quality Assurance Project Plan Development or Revision (as necessary). EPA estimates an additional 20 Level of Effort (LOE) hours will be required for Task 0 under amendment one to support the administration of the work assignment and the QAPP resulting in a new revised overall total for Task 0 in the work assignment (to date) of 60 (20 + 40) LOE.

Task 1 (Contract PWS 1.1, 1.3, 2.0, 3.2, 3.3, 3.4, 3.5, 3.6, 3.10, 3.12, 3.14, 5.1, 5.7): EPA NPDES WET Program and Regional Whole Effluent Toxicity (WET) Technical Support. Task 1 includes two Subtasks. Subtask 1 is to provide NPDES WET technical and national programmatic support to EPA HQ and its ten Regions. Subtask 2 is to provide NPDES WET technical support on a joint EPA Water Permits Division (WPD) and EPA R8 NPDES WET discharge monitoring report (DMR) test data project. EPA estimates an additional 15 LOE hours for Subtask 1 only under amendment one, resulting in a new revised overall total for Task 1/Subtask 1 in the work assignment (to date) of 82 (15 + 67) LOE hours.

Subtask 1: NPDES WET National Program

The contractor shall continue to provide NPDES WET permit programmatic and technical support to EPA HQ and its ten EPA Regions for questions or topic areas concerning EPA Regional, State and Tribal NPDES WET permits program implementation as outlined in the original performance work statement for this option period and Task 1/Subtask 1. However, in addition, the contractor shall provide programmatic and technical expert support to EPA through the EPA WACOR for questions received from EPA Region 6 on technical areas and questions for some of Region 6 state permits (e.g., total dissolved solids, high salinity). The EPA WACOR has sent some materials received from EPA Region 6 and will forward the remaining information and/or documents from EPA Region 6 to the contractor when they are received. The contractor has had one call already with EPA Region 6 staff and the EPA WACOR during which most of the technical questions and issues were identified and EPA Region 6 will be providing the additional information needed to the EPA WACOR to provide to the contractor to support the necessary technical assessment requested.

Subtask 1 NPDES WET National Program Deliverables: The contractor shall provide technical support to EPA Region 6 through the EPA HQ WACOR on EPA Region 6 NPDES WET permits program questions. For planning purposes, the contractor shall assume that the deliverables are due to the EPA WACOR within one week after the EPA WACOR's written technical directions.

Subtask 2: No change.

Task 2 (Contract PWS 1.1, 1.3, 2.0, 3.2, 3.3, 3.4, 3.5, 3.6, 3.10, 3.12, 3.14, 5.1, 5.7): EPA HQ NPDES WET Training Courses Support. Task 2 is for EPA HQ training courses provided to EPA Regional, NPDES State and Tribal government employees who are NPDES permit writers or who work with permit writers on developing permits for industrial and municipal facilities under the NPDES WET permits program. EPA estimates an additional

185 LOE hours will be required for Task 2 under amendment one for a new revised overall total for Task 2 in the work assignment (to date) of 342 (185 + 157) LOE hours.

The contractor shall provide technical support and expertise in providing two confirmed EPA HQ national WET training courses: (1) EPA Region 5 (R5) Course at EPA R5's Chicago, IL office from April 9-11, 2019; a EPA HQ Office of Water course for up to two days in Washington, D.C. at EPA HQ (dates to be determined yet); and a Region 8 (R8) course at EPA R8's Denver, Colorado office in late June 2019 (exact dates still being determined).

The contractor shall provide up to two technical NPDES WET experts for the three courses who will work closely with the EPA WACOR to deliver each of these courses. Most likely two instructors will be requested for the EPA R5 and HQ course and one instructor for the EPA R8 course. The courses shall be provided to EPA Regional NPDES permits employees and their NPDES state and/or tribal government representatives during a two and half day course (eight hours/full day). The morning of the first half day may also include a NPDES WET technical discussion with each of the respective Regional and/or state host for each of the respective courses prior to the course starting the afternoon of the first day. The contractor shall use existing EPA Headquarters NPDES WET training course materials previously developed with the EPA WACOR under a previous Tetra Tech, Inc. contract with EPA WPD/OWM. The EPA WACOR working with each of the respective EPA Regional NPDES WET coordinator(s) for each respective course may direct the contractor to make a few minor course modifications to incorporate some of the Regional, state or tribal permitting program relevant information into the existing course materials (i.e., Regional, state or tribal permit examples, TIE/TRE case examples, WET laboratory result sheets for the WET test data review class exercises). There will be only up to three calls about one to two months before the course to discuss NPDES WET technical issues with each respective Region and if the contractor has any course delivery logistical questions that must be addressed. The calls will last from a minimum fifteen minutes or less or up to an hour using EPA HQ conference lines. The EPA WACOR and the respective EPA Regional office will make all the training course logistical arrangements including registration of course attendees and complete possibly some of the administrative tasks (i.e., name tags). EPA will print, assemble and ship the course books. The contractor will provide to the EPA WACOR the final electronic files set up for EPA to print the course books. The contractor will provide at the course a WET test species display and possibly for the Regional course a modified acute WET test demonstration as part of the course class activities.

Task 2 Deliverables: The contractor shall provide technical expert support to EPA on providing three NPDES WET courses to EPA HQ-OW and Regional, State, and Tribal government employees in two EPA Regions. The contractor shall provide either one or possibly two technical NPDES WET experts, (as requested through the EPA WACOR's PWS for each course or a technical directive), who will support EPA in delivering a NPDES WET national training course. Also, there may be a NPDES WET technical discussion with the respective EPA Regional and/or State host for each training course in the morning before the course begins in the afternoon. The contractor may be asked to slightly modify EPA's HQ NPDES WET course to incorporate each course's respective Regional and states' reference information. The three confirmed courses will be held at the following locations: EPA HQ-OW's office in Washington,

D.C.; R5's office in Chicago, IL; and R8's office in Denver, CO. Course planning and materials preparation for the three courses will be completed before June 30, 2019 in option period four's performance period. For planning purposes, the contractor shall send by email the final course book and any other materials to the EPA WACOR by or before four weeks prior to the dates of each course for reproduction by the EPA print office or for smaller copy jobs by the EPA WACOR. Other specific instructions for preparing for and delivering each course will be provided by the EPA WACOR through a written technical directive emailed to the contractor.

Finally, the contractor shall order and provide to the EPA WACOR a minimum of 250 more flash drives (300, if possible, depending on purchase estimates) with the EPA course materials for the attendees loaded on to each flash drive as was done for the previous 2018 NPDES WET courses and as directed by the EPA WACOR.

TASK 3: (Contract PWS 1.1, 1.3, 2.0, 3.2, 3.3, 3.4, 3.5, 3.6, 3.14): Expert Technical Support on Whole Effluent Toxicity (WET) Test Methods and WET Test Data Statistical Analysis Approaches. EPA estimates that 26 more LOE hours are needed for the additional technical reviews requested under Subtask 1 under amendment one resulting in a new revised overall total for Task 3/Subtask 1 in the work assignment (to date) of 86 (26+ 60) LOE hours.

Subtask 1*: *Expert Technical Support for NPDES WET Implementation Challenges.
The EPA WACOR has provided the below bulleted list of four documents (including each document's date and the number of pages per document) to the contractor to review and assess, as appropriate and relevant, each document's technical content and merit. In addition, as part of the review, the EPAWACOR directs that the contractor review (if included in the documents) comments, proposals or challenges to EPA's NPDES WET program implementation approaches especially EPA's recommendations on data interpretation and application of recommended statistical approaches. The EPA WACOR requests that the contractor, as part of the technical review, provide draft expert recommendations or possible options for EPA's review to address the NPDES WET technical questions raised concerning EPA's WET test methods (especially the short-term chronic *Ceriodaphnia dubia* test) and stakeholders' challenges to EPA's recommended statistical approaches (especially EPA's 2010 Test of Significant Toxicity statistical approach) used for analyzing valid WET test data.

After the EPA WACOR, OGC, and EPA managers including EPA Region(s) have reviewed the contractor's draft deliverables and provided review comments back to the contractor through the EPA WACOR the contractor shall revise the draft deliverables based on the EPA comments received within a time frame specified by the EPA WACOR.

List of incoming documents provided to the contractor by E-mail:

- National Association of Clean Water Agencies' (NACWA) 2010 comments (1/11/10, 3.5 pages) on EPA's draft 2010 Test of Significant Toxicity statistical approach.

- California's "Draft Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California" (10/19/18, 31 pages).

- California Association of Sanitation Agencies' (CASA) *white paper* (11/28/18, 25 pages), "*Ceriodaphnia dubia* Short-term Chronic Reproduction Test: Understanding the Probability of Incorrect Determinations of Toxicity in Non-Toxic Samples."

- NACWA's comment letter (dated 12/20/18, 7 pages) on California's "Toxicity Provisions in the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California and Accompanying Staff Report."

Subtask 1 Deliverables: Expert Technical Support for NPDES WET Implementation Challenges. The contractor shall provide a preliminary draft of their technical review to the EPA WACOR. The EPA WACOR will schedule a call with the contractor to discuss this first draft and then establish deliverable deadlines for subsequent revised drafts post EPA reviews.

Subtask 2: No change.

TASK 4: ***No Change.***

5. QUALITY ASSURANCE (QA) STATEMENT: ***No Change.***

6. SPECIAL REPORTING REQUIREMENTS: ***No Change.***

7. RESOURCE ESTIMATES (LOE): EPA estimates an additional total of 246 LOE for amended Tasks 0, Task 1/Subtask 1; Task 2, and Task 3/Subtask 1 under amendment one resulting in a new overall revised total in this work assignment (to date) of 821 (246 + 575) LOE hours *(which includes previous LOE from tasks not revised under amendment one: Task 1/Subtask 2; Task 3/Subtask 2; and Task 4)* to complete the work requested.

8. GOVERNMENT RESPONSIBILITIES: ***No Change.***

9. SURVEILLANCE PLAN: (discussed in the *contract)*. ***No Change.***

10. CONFERENCE/MEETING GUIDELINES AND LIMITATIONS: ***No Change.***

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-23

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Technical Support for Developm

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	3.4 Technical Guidance, Report Development, and Ge

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 08/05/2014 To 06/30/2019 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name Donna Keclik (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	312-886-6766
	FAX Number:	
Project Officer Name Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-3133
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name Courtney Stallworth (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	513-487-2002
	FAX Number:	

PERFORMANCE WORK STATEMENT
Tetra Tech, Inc., Contract EP-C-14-016,
Work Assignment 4-23

Period of Performance: Work Assignment July 1, 2018 to June 30, 2019
Title: Technical Support for Development and Review of Biological Indicators

Work Assignment COR (WACOR):
Donna Keclik
U.S. EPA, Region 5
77 W. Jackson Blvd.
Mail Code: (WW-16J)
Chicago, IL. 60604
312-886-6766
keclik.donna@epa.gov

Alternate WACOR:
Belinda Montgomery
U.S. EPA, Region 5
77 W. Jackson Blvd.
Mail Code: (WW-16J)
Chicago, IL. 60604
312-886-5949
montgomery.belinda@epa.gov

A: BACKGROUND

EPA SHPD is working with the regions, states and tribes to develop and assess biological indicators. This Work Assignment shall provide technical support to Region 5 in the continuation of the following from WA 3-23: (1) review of the proposed thresholds for the Wisconsin Department of Natural Resources biological criteria for rivers and streams and (2) evaluation of the potential development of a Regional lakes macrophyte biological indicator.

Wisconsin Threshold Evaluation

The Wisconsin DNR has developed a macroinvertebrate and fish index of biological integrity that can discriminate degrees of biological condition. The indexes can be used to determine biological impairment in relation to a least disturbed reference condition. However, an index threshold at which impairment can be assessed has not been thoroughly interpreted in terms of biological integrity. Therefore, a study is proposed to further characterize the existing threshold and other possible thresholds in relation to reference conditions, measured stressors, and individual metrics. Because thresholds are established to identify and manage impairments, it is critical that the resource managers clearly communicate the value of the resource, when that resource or use is impaired, and what the impairment means in terms of resource or use degradation. The proposed analyses will not prescribe a threshold, but will provide information so that resource managers will

have a better understanding of the characteristics of the biological condition at alternative thresholds.

The index, metrics, and thresholds provided by WDNR along with reference, classification, and stressor variables will be used in the analyses. Analyses will include reference site evaluation and proportional odds modeling to characterize probabilities that index values accurately indicate reference or stressed conditions. Additional analyses will be conducted if they are found to be informative of the threshold characterization., This could include deviation from index reference values in terms of standard deviation and precision, taxa loss with increasing stress, comparison to stressor gradients, change-point analysis with individual stressors, and comparison of index values and thresholds around the region, among assemblages, and to BCG models where applicable.

Region 5 Macrophyte Indicator Development

The Wisconsin Department of Natural Resources collects data on macrophyte species abundance as part of a larger effort to monitor lake ecological condition. Recently, WDNR developed and tested a macrophyte-based bioassessment approach for Wisconsin lakes (Mikulyuk et al. 2017). The assessment approach links macrophyte abundance to lake ecological condition via data-driven estimates of taxon-specific tolerance to multiple anthropogenic disturbance variables. Assessments occur within region & hydrology lake groups and are based on the frequency of occurrence of species that were statistically classified as sensitive, tolerant, or highly tolerant to anthropogenic disturbance. In conducting the assessment, researchers noted that species growth forms were not equally distributed across tolerance clusters: disturbance-sensitive taxa were often short in stature relative to disturbance-tolerant taxa, while tall submersed and free-floating taxa were highly tolerant. Floating leaf taxa that are tolerant of nutrient enrichment but associated with low shoreline development were found in the moderately tolerant cluster. This finding, along with existing work linking trends in growth-form specific patterns to factors like shoreline disturbance, nutrient enrichment and agricultural activity suggest there may be some potential to use data on species growth form to track anthropogenic stress in lakes (Radomski and Goeman 2001, Egertson et al. 2004, Borman 2007, Borman et al. 2009)

The 2012 National Lakes Assessment included a pilot project to collect data on aquatic macrophyte communities. The method involved collecting information at 1-m depth intervals along 5 transects extending perpendicularly from habitat assessment plots lakeward. At each meter gained in depth, technicians used a rake sampler to observe species growth form presence. Technicians also used transects to estimate the maximum depth of plant colonization. Maximum depth of colonization may be used as a stable and seasonally-integrated indicator of water clarity and/or nutrient status. Species growth form may relate to local or lake-wide patterns in anthropogenic disturbance. We need support to assemble Region 5 data and conduct exploratory analyses that will ultimately determine whether macrophyte growth form and/or maximum depth of colonization can serve as good indicators of anthropogenic disturbance.

This project will first support the assembly of a Region 5-wide dataset on anthropogenic disturbance and reference conditions, which will have multiple research applications. Second, it will involve exploratory work on developing a macrophyte-based bioindicator for Region 5

lakes. Few bioindicators exist for lakes; development of additional methods to classify and track lake ecological condition is crucial. This work will

- satisfy 305(b) and 303(d) reporting requirements to EPA
- Identify land use, chemical and physical stressors to lake biological communities
- Establish a set of reference-condition lakes for Region 5 for use in future work
- Explore macrophyte data with reference to reference-condition status and stressor gradients.

C. ON-GOING RESPONSIBILITIES OF THE CONTRACTOR

The EPA Work Assignment COR (WACOR) will coordinate and set-up monthly working calls among EPA staff and the contractor's technical lead to discuss the status and progress of the work under this Work Assignment. The contractor shall participate in these monthly calls. The frequency of the monthly conference calls may be modified based on project status at the request of the contractor and only as approved by EPA. The contractor shall notify the EPA COR of any problems, delays or questions as soon as they arise, including immediate notification of any Work Assignment delays. The contractor shall provide a monthly status report in accordance with contract requirements which will be used for invoice review purposes. All reporting shall be provided in accordance with the requirements noted in Contract EP-C-14-016 and in Sections F&G of this Work Assignment.

Generally, written materials including meeting summaries shall be furnished by the contractor within five (5) business days after request in draft form for the WACOR to review; then a final written deliverable would be expected within five (5) business days after receipt of written technical direction from the WACOR, including the WACOR's comments and edits to the draft deliverable.

D: TASKS

TASK 1: Conference Calls

The Contractor shall participate in calls with the EPA WACOR to discuss the following: points of contact, roles and responsibilities, Quality Assurance Project Plan (QAPP) protocols, timelines, the schedule of benchmarks, milestones and deliverables, establish dates and times for monthly calls (if necessary) and monthly technical progress reports and general work assignment administrative and technical information.

TASK 2: QAPP

The Contractor has provided a QAPP that addresses the use of secondary data for purposes of the work assignment.

Additional QA Documentation Required

In addition to the original QAPP which was received under WA 3-23 of this contract, all major deliverables (e.g., Technical Support Documents, Study Reports, Study Plans, etc.) produced by the Contractor under this TO must include a discussion of the QA/QC activities that were or shall be performed to support the deliverable.

The Contractor shall immediately notify the EPA WACOR of any QA problems encountered that may impact the performance of this Work Assignment, with recommendations for corrective action.

The Contractor also shall provide EPA with monthly reports of QA-related activities performed during implementation of this TO. These monthly QA reports shall identify QA activities performed to support implementation of this task order, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the Contractor shall include this as a part of the contract-required monthly financial/technical progress report.

TASK 3: Wisconsin Threshold Evaluation continued from WA 3-23

TASK 3.4 Assessment of Proposed Biological Thresholds
The contractor shall provide an evaluation of reference site identification in the context of minimal and least disturbed conditions, the results of the proportional odds model including graphics and tabular probabilities in relation to reference designations and the results of any additional analyses as needed to further interpret possible thresholds. A draft and final synthesis report shall be provide including all deliverables.

TASK 4: Region 5 Macrophyte Indicator Development continued from WA 3-23

TASK 4.4: Exploratory analysis
The Contractor shall explore univariate relationships between macrophyte data and anthropogenic disturbance data for the 2012 NLA lakes. The contractor shall choose to use graphical displays as well as simple statistical models to determine whether macrophyte growth form data is responsive to a) single measures of anthropogenic disturbance, b) the disturbance index, and c) categorical reference condition status. Responsiveness may include regionalization or classification steps explored under Task 3.3.
Macrophyte response variables include:

- Maximum depth of colonization (MDC)
- Lake-wide frequency of occurrence of each growth form (Number of sites where present divided by all sampled points)
- Littoral frequency of occurrence of each growth form (Number of sites were present divided by number of sites shallower than observed MDC)
- Vegetated frequency of occurrence of each growth form (Number of sites where present divided by number of vegetated sites)
- Littoral mean number of growth forms per point (mean number observed at each point shallower than observed MDC)

This information shall be joined to and submitted with bioassessment database created under Task 3. Macrophyte metrics shall include metadata sufficient to understand the data compiled and steps necessary to repeat any calculations.

TASK 4.5: Assessment of development potential
The contractor shall provide the results of this exploratory analysis to EPA. An accompanying methods summary shall provide enough detail to clearly describe the exploratory steps taking

along with an initial assessment of findings. Descriptions of patterns observed and any compelling evidence of responsiveness or lack of responsiveness should be presented to inform the decision of whether to pursue a macrophyte-based bioindicator. Any opportunities, data limitations or other barriers to indicator development shall be clearly reviewed. In the evaluation of the exploratory work, the contractor shall propose a new approach if warranted or lay out additional opportunity areas.

TASK 4.6 Continuation of Classification Confirmation (when additional funding is available)
Based on the information developed in Task 4.4 the contactor shall continue the exploration the same classification of variable from the reference sites to all sites completing Principal Components Analysis (PCA) for all sites. By doing this the contractor shall be able to identify suggested classes for those areas lacking reference sites.

TASK 4.7 Additional Confirmation of Reference Sites (when additional funding is available)
To confirm and strengthen the Classification approach developed the contractor shall repeat the lake classes using a more quantitative analysis. The contractor shall look at using cluster analysis, random forest analysis relating environmental variables to macrophyte or repeat the initial analysis with all reference and other sites (instead of using the best reference sites) to include more spatial coverage at similar disturbance levels. The final direction will be discussed and determined based on input from the WACOR and technical lead.

TASK 4.8 Metric Testing within Classes (when additional funding is available)
Once lake classes are established from task 4.6 and task 4.7 the contactor shall calculate DE and Z-scores for all metrics with the lake class using the additional metrics including new configurations and visual assessment metrics.

Task 4.9 Index Calculation (when additional funding is available)
The contactor shall develop a macrophyte index based on information collected and compiled in tasks 4.6 to 4.8 above.

TASK 4.10 Report on expanded Lake Macrophyte development (when additional funding is available)

The contractor shall provide the results of the analyses taken in task 4.6 – 4.9 to EPA. An accompanying methods summary shall provide enough detail to clearly describe the steps taken and results. Descriptions of patterns observed and any compelling evidence of responsiveness or lack of responsiveness should be presented to inform the decision of whether to pursue a macrophyte-based bioindicator. Any opportunities, data limitations or other barriers to indicator development should be clearly reviewed.

E. SCHEDULE OF DELIVERABLES

TASK	DELIVERABLE	DUE DATE

1	Participate in conference calls as necessary	Ongoing
2	Additional QAPP requirements	Due with monthly reports and in final reports
3.4	Assessment of proposed thresholds draft report	July 2018
	Assessment of proposed thresholds final report	December 2018
4.3	Lake classification (ecoregion x hydrology)	August 2018
4.4	Report on exploratory analysis	December 2018
4.5	Assessment of index development potential	February 2019
4.6	Continuation of Classification Confirmation	March 2019
4.7	Additional Confirmation of Reference Sites	April 2019
4.8	Metric Testing within Classes	April 2019
4.9	Index Calculation	May 2019
4.10	Draft Report on expanded Lake Macrophyte development	May 2019
	Final Report on expanded Lake Macrophyte development	June 2019

F. REPORTING

All documentation and reporting under this Work Assignment shall be in compliance with contract requirements.

G. DELIVERABLES AND GENERAL PERFORMANCE:

The contractor shall, when requested by the WACOR provide supporting documentation when EPA is reviewing draft deliverables to facilitate EPA review and approval of the Contractor's work. Documentation shall include the electronic files and detailed, written explanation of all steps and decisions. The Contractor is expected to comply with this request when it is received from the WACOR regardless of whether such a request is described in the individual tasks of this PWS. The Contractor is expected to furnish this information in such manner that no proprietary software will be needed for EPA to read, interpret, replicate or model any work product of this agreement, unless otherwise noted in this PWS or by written permission of the EPA WACOR. The objective is that anyone with the appropriate skill level can use the information produced under this Work Assignment to check or duplicate the Contractor's work for replication and/or verification. With this understanding of how this Work Assignment's data will be used, any elements essential to successfully replicating analysis shall be provided to EPA in a commonly-used format.

The Contractor shall provide both scientific/technical and editorial review as defined in section 2.6 of the Prime Contract Performance Work Statement on any Work Assignment draft product before submission to the EPA WACOR for review. This process does not need to be performed by an independent peer reviewer. It is expected that all editorial review comments will be addressed before deliverables are furnished to the EPA WACOR for review (in the case of draft deliverables) or acceptance (in the case of final deliverables); and that questions raised by scientific/ technical review will be either addressed or discussed with the EPA WACOR prior to the contractor furnishing draft deliverables.

EPA anticipates that the contractor's work will be judged "satisfactory" according to the Quality Assurance Surveillance Plan (QASP) if WACOR edits to deliverables are no more than ten percent (10%) of the content of any draft deliverable, or less than two percent (2%) of any final deliverable. In addition, EPA anticipates that the contractor's work will be judged "satisfactory" according to the QASP if less than ten percent (10%) of the pages of written final deliverables contain Work Assignment CORs edits for such things as grammar, punctuation and format. The EPA WACOR can upon request furnish a copy of the EPA correspondence manual for the contractor's use.

Upon receipt of written technical direction from the WACOR, the contractor shall furnish:

- **all deliverables (draft and final) to EPA shall be furnished in an electronic version** and in an electronic format that EPA can support.

- **all final deliverables to EPA shall include one (1) electronic copy and two (2) paper copies.** All final deliverables shall be prepared according to EPA publication guidelines and shall be compliant with Section 508 of the **Americans with Disabilities Act.**

All submittals to EPA shall be formatted as described below.

Electronic submissions shall be made in the following manner: electronic Microsoft Word© for any written reports, summaries or analysis documents, Microsoft Excel© format for any and all spreadsheets, raw data, coding and modeling work (including all model runs with essential data to replicate model runs), and Microsoft Access© format for any and all databases or for other data as is approved by the EPA WACOR in writing. **Final electronic submissions** shall be on Compact Disk (CD) or Digital Versatile Disc (DVD). The contractor may utilize an FTP, but only if the EPA WACOR gives written permission. Every electronic document and all of the sections, text, graphs, charts or figures shall be unlocked, open and editable so that EPA may make further changes.

Final paper submissions shall be made in the following manner: two (2) separate and identical copies of all deliverables must be submitted; each separate copy includes all the products due at that date (i.e., Task 1, 2, etc.), and must be submitted in one (1) or more bound volumes, as appropriate, with a title page, an executive summary describing the purpose and content, and an index, located inside the front cover of each bound volume, and electronic copies enclosed in envelopes (or other suitable means) bound in the respective volume. Although PDF versions of materials may be additionally submitted per the contractor's prerogative, neither electronic nor paper PDF versions will be acceptable as any final work product.

Appropriate electronic format that is supported by EPA and printing of all GIS data layers, maps, photos, bench sheets and other written material not easily printed or saved in the above formats will be discussed and a format agreed upon with the EPA WACOR prior to submittal by the contractor.

H. ANTICIPATED TRAVEL

No travel anticipated under this contract.

I. CONTRACTOR IDENTIFICATION

Contractor personnel shall always identify themselves as Contractor employees by name and organization and physically display that information through an identification badge. Contractor personnel are prohibited from acting as the Agency's official representative.

The Contractor shall refer any questions relating to the interpretation of EPA policy, guidance, or regulation to the EPA WACOR.

J. MEETINGS AND CONFERENCES

No single event under this WA is anticipated to exceed $20,000. The contractor shall immediately notify the EPA Contracting Officer (CO), CL-COR and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur $20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

References:

Borman, S. C. 2007. Aquatic plant communities and lakeshore land use: changes over 70 years in Northern Wisconsin Lakes. Dissertation. University of Minnesota, Minneapolis.

Borman, S. C., S. M. Galatowitsch, and R. M. Newman. 2009. The effects of species immigrations and changing conditions on isoetid communities. Aquatic Botany **91**:143-150.

Danz, N. P., G. J. Niemi, R. R. Regal, T. Hollenhorst, L. B. Johnson, J. M. Hanowski, R. P. Axler, J. J. H. Ciborowski, T. Hrabik, V. J. Brady, J. R. Kelly, J. A. Morrice, J. C. Brazner, R. W. Howe, C. A. Johnston, and G. E. Host. 2007. Integrated Measures of Anthropogenic Stress in the U.S. Great Lakes Watershed. Environmental Monitoring and Assessment **39**:631-647.

Egertson, C. J., J. A. Kopaska, and J. A. Downing. 2004. A century of change in macrophyte abundance and composition in response to agricultural eutrophication. Hydrobiologia **524**:145-156.

Falcone, J. A., D. M. Carlisle, and L. C. Weber. 2010. Quantifying human disturbance in watersheds: Variable selection and performance of a GIS-based disturbance index for predicting the biological condition of perennial streams. Ecological Indicators **10**:264-273.

Mikulyuk, A., M. Barton, J. Hauxwell, C. Hein, E. Kujawa, K. Minahan, M. E. Nault, D. L. Oele, and K. I. Wagner. 2017. A macrophyte bioassessment approach linking taxon-specific tolerance and abundance in north temperate lakes. Journal of Environmental Management **199**:172-180.

Radomski, P., and T. J. Goeman. 2001. Consequences of human lakeshore development on emergent and floating-leaf vegetation abundance. North American Journal of Fisheries Management **21**:46-61.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-24

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Enhancements to the Water Qual

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	Section 3.3 Paragraph 1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/21/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 08/05/2014 To 06/30/2019 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name: Ashley Allen (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1012 FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2036 FAX Number:

PERFORMANCE WORK STATEMENT
Tetra Tech Contract No. EP-C-14-016
Work Assignment # 3-24

A. TITLE: Enhancements to the Water Quality Analysis Simulation Program (WASP)

B. Work Assignment Contracting Officer Representative (WACOR)

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Alternate Work Assignment Contracting Officer Representative

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C. PERIOD OF PERFORMANCE: Date of issuance through June 30, 2018

D. TASKS:

TASK 1 – Work Plan and Monthly Progress Reports

The Contractor shall develop a detailed work plan and cost estimate for the tasks outlined in this work assignment (WA). The plan shall be submitted in accordance with the requirements noted in Contract EP-C-14-016. The plan shall contain, but is not limited to, a work-flowchart, schedule, staffing plan, qualifications of proposed staff, budget, and level of effort (LOE) estimates. P-level distributions, hours, and funds required should be provided for each task. Costs greater than $100.00 shall be itemized in detail. Prior to the submission of the work plan, the Contractor shall consult with the EPA WACOR as needed via conference call on any issues needing clarification.

This task also provides for creation of monthly progress and financial reports by the Contractor. Monthly financial reports shall include a table with the invoice LOE and costs broken out by the tasks in this WA. The monthly progress reports shall also indicate in a separate Quality Assurance (QA) section whether significant QA issues have been identified and how they are being resolved.

TASK 2 – Quality Assurance

Background: Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 (May 2000), and implementing guidance CIO-2105-P-01-0 (May 2000). All projects that involve the generation, collection, analysis and use of

environmental data shall have an approved Quality Assurance Project Plan (QAPP) in place prior to the commencement of the work.

Task Description: The activities in this work assignment involve gathering, evaluating, analyzing, or otherwise using existing environmental data (also known as "secondary" use of data) and developing new code for adding algorithms to the WASP interface. Therefore, the Contractor shall prepare a QAPP that describes specific QA strategies that shall be used when performing environmental data operations to support the objectives of this work assignment. The Contractor shall write the QAPP using active voice, and shall ensure the QAPP provides enough detail to clearly describe:

- Specific objectives of the project(s) supported by this work assignment, including typical questions that shall be answered when collecting information
- The type of data to be collected, generated, and used under this work assignment to support the project objectives
- The quality objectives needed to ensure the data shall support the project objectives, and
- The QA/QC activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed. QA/QC activities shall include the development of test model datasets will be developed to determine accuracy of new algorithms added to the WASP interface. This will include all methods for transferring information from the user interface to the scientific water quality module code.

The Contractor also shall provide EPA with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities performed to support implementation of this work assignment, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the Contractor may include this as a part of the contract-required monthly financial/technical progress report.

Within 15 days after submittal of the work plan, the Contractor shall prepare and submit a QAPP. EPA will review the submitted QAPP and provide the Contractor with written approval or comments within 15 days of receiving the Contractor's submission. If EPA requests changes, the Contractor shall revise the submitted QAPP within 10 days of receipt EPA comments, unless otherwise instructed by the EPA WACOR. All activities performed under this work assignment prior to submission and approval of the QAPP shall comply with the QA/QC strategies documented in the Contractor's approved QAPP. (The QAPP requirements shall be applied retroactively to this period that lasts no more than 50 days from submission of the Contractor's work plan.) If the QAPP is not fully approved (signed) within 50 days after submission of the Contractor's work plan, the Contractor shall stop performing any activities that that involve the collection, generation, evaluation, analysis or use of environmental data, unless explicit written permission to continue doing so is provided by the EPA WACOR.

If the EPA WACOR issues written technical direction under this WA that requires the Contractor to perform activities beyond those described here, the Contractor shall revise the QAPP as needed and submit it to EPA for review and approval.

TASK 3 – WASP Graphical User Interface Enhancement – Lake Model

Background An enhancement is needed to WASP because too many nutrient TMDLs and lake models are using overly simplistic models such as BATHTUB. This enhancement to WASP will allow modelers not only to consider the impacts of stratification on nutrient expression in lakes, but will also be capable of modeling riverine systems' flow into and out of lakes. This effort will involve enhancement of the graphical user interface to account for the additional data and model parameterization needs for the lake model. This includes methods for parameterizing the lake vertical transport as well as providing rating curves to the model.

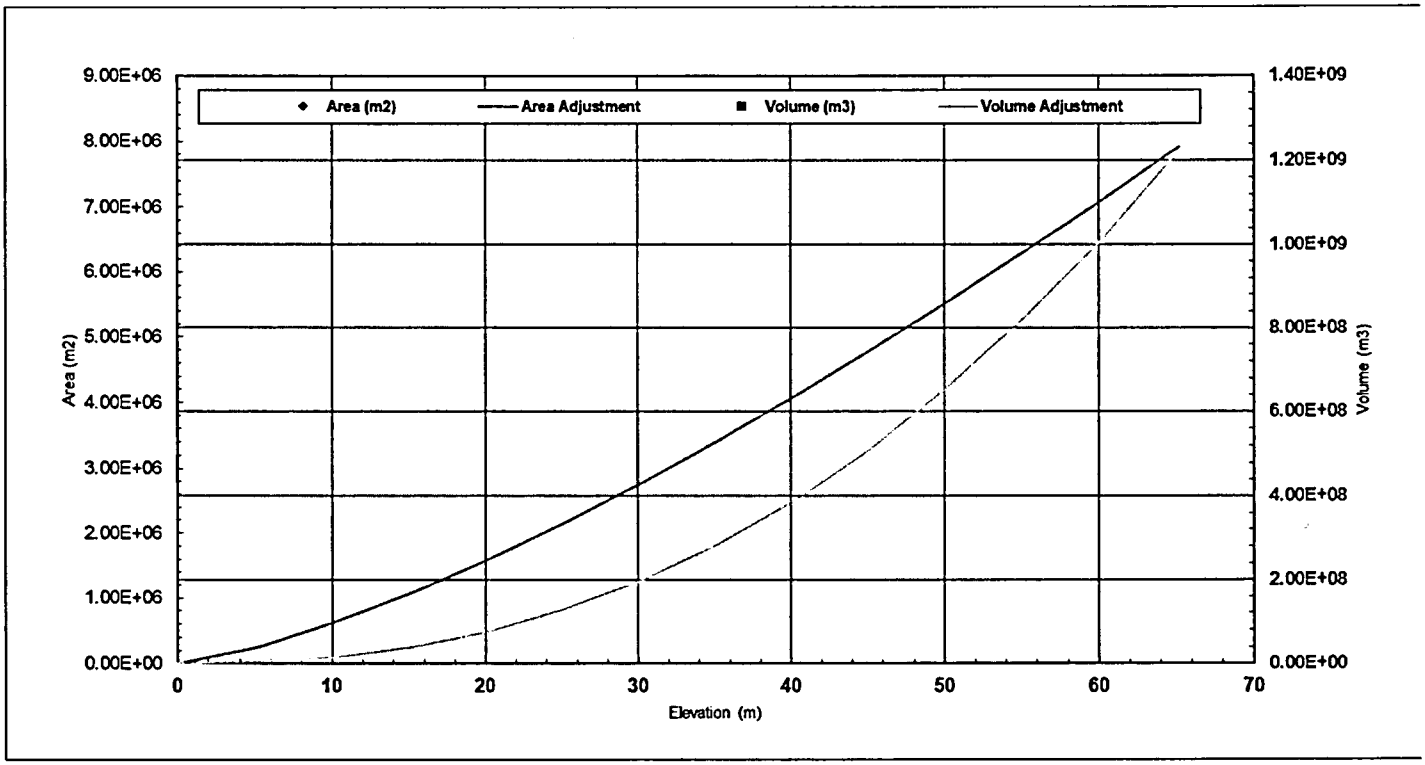
Task Description: The WASP graphical user interface will modify the WASP interface to simulate 2-D vertical lakes. The interface will need the capability to provide input information for 1 to n Vertical Lake Segments. The interface will be modified to dynamically provide information for the lake modules to the scientific FORTRAN modules, much like the other transport options in WASP. The interface will be modified to accommodate:

1. Stage-Volume Curve/Area-Volume Curve – develop input screens and output mechanisms to enter and send Stage/Volume & Area/Volume curve information to the scientific module.

Geometric factors	Power Adjustment

AREA-VOLUME		WIDTH	
a Coeff	26246.20	d Coeff	7.50
b Coeff	1.367	e Coeff	1.20
	0		

Elevation (m)	Area (m2)	Volume (m3)	Computed Area	Computed Volume
0.00			0	0
0.20			2908	1377
5.20			249944	3076413
10.20			627802	15157281
15.20			1083045	38966237
20.20			1597650	76389098
25.20			2161628	128937656
30.20			2768445	197897873
35.20			3413424	284401037
40.20			4093016	389464394
45.20			4804417	514016863
50.20			5545343	658916511
55.20			6313892	824963034
60.20			7108449	1012907033
65.20			7927621	1223457115



2. Weir Definition/Stage-Discharge Curve – develop input screens and output mechanisms to enter and send weir definition and stage-discharge curve.

WEIR	
Weir length (m)	
Weir height (m)	
Discharge coeff	3.600
Stage-Discharge	
Elev (m)	**Qout (m3/s)**
10.20	**4.200**
15.20	**8.800**
20.20	**12.400**
25.20	**16.667**
30.20	**20.767**
35.20	**24.867**
40.20	**28.967**
45.20	**33.067**
50.20	**37.167**
55.20	**41.267**
60.20	**45.367**
65.20	**49.467**

3. Vertical Mixing Coefficients – develop input screens and output mechanisms for vertical mixing coefficients.

System ID:	*Value*	*Units*
Sheltering Coefficient	**1**	**Dimensionless**
Penetrative convection fraction	**0.3**	**Dimensionless**
Contribution of wind to eddy diffusion	**5.0000E-04**	**Dimensionless**
Contribution of flow to eddy diffusion	**5.0000E-04**	**Dimensionless**
Critical density	**0.100**	**kg/m^3**

4. Dam Outflow Port Definition – develop input screens and output mechanisms to define up to 10 withdrawal ports per Vertical Lake Segment.

Outlet structure	Port
Port properties	
Number of ports	5

Port 1		*Port 2*		*Port 3*		*Port 4*		*Port 5*	
Elevation (m)	92.260	Elevation (m)	75.490	Elevation (m)	57.190	Elevation (m)	29.740	Elevation (m)	16.170
Vertical Dim. (m)	4.575	Vertical Dim. (m)	4.575	Vertical Dim. (m)	4.575	Vertical Dim. (m)	4.575	Vertical Dim. (m)	4.575
Horizontal Dim. (m)	7.320	Horizontal Dim. (m)	7.320	Horizontal Dim. (m)	7.320	Horizontal Dim. (m)	4.880	Horizontal Dim. (m)	2.440
Time series of outflows		*Time series of outflows*		*Time series of outflows*		*Time series of outflows*		*Time series of outflows*	
t (d)	Qout (m3/s)	t (d)	Qout (m3/s)	t (d)	Qout (m3/s)	t (d)	Qout (m3/s)	t (d)	Qout (m3/s)
1/1/85	0.000	1/1/85	0.000	1/1/85	58.280	1/1/85	38.860	1/1/85	0.000
1/2/85	0.000	1/2/85	0.000	1/2/85	57.770	1/2/85	38.520	1/2/85	0.000
1/3/85	0.00	1/3/85	0.00	1/3/85	57.60	1/3/85	38.40	1/3/85	0.00
1/4/85	0.000	1/4/85	0.000	1/4/85	57.770	1/4/85	38.520	1/4/85	0.000
1/5/85	0.000	1/5/85	0.000	1/5/85	57.940	1/5/85	38.630	1/5/85	0.000
1/6/85	0.000	1/6/85	0.000	1/6/85	57.600	1/6/85	38.400	1/6/85	0.000
1/7/85	0.000	1/7/85	0.000	1/7/85	57.600	1/7/85	38.400	1/7/85	0.000
1/8/85	0.000	1/8/85	0.000	1/8/85	58.110	1/8/85	38.740	1/8/85	0.000
1/9/85	0.000	1/9/85	0.000	1/9/85	58.280	1/9/85	38.860	1/9/85	0.000
1/10/85	0.000	1/10/85	0.000	1/10/85	56.580	1/10/85	37.720	1/10/85	0.000
1/11/85	0.000	1/11/85	0.000	1/11/85	54.710	1/11/85	36.480	1/11/85	0.000
1/12/85	0.000	1/12/85	0.000	1/12/85	51.490	1/12/85	34.320	1/12/85	0.000
1/13/85	0.000	1/13/85	0.000	1/13/85	39.080	1/13/85	39.080	1/13/85	0.000
1/14/85	0.000	1/14/85	0.000	1/14/85	23.360	1/14/85	54.520	1/14/85	0.000
1/15/85	0.000	1/15/85	0.000	1/15/85	23.530	1/15/85	54.910	1/15/85	0.000
1/16/85	0.00	1/16/85	0.00	1/16/85	19.46	1/16/85	45.40	1/16/85	0.00
1/17/85	0.00	1/17/85	0.00	1/17/85	16.82	1/17/85	39.25	1/17/85	0.00

Deliverable: The deliverable shall be all developed and modified interface source code updated in the WASP Interface source code repository and a successfully compiled and built WASP installation package.

Technical Expertise Required: The key technical individual(s) who work on this assignment shall have extensive working knowledge of the WASP graphical user interface source code.

TASK 4 – Geographical Processing of WASP Specific Model Data

Background: As EPA and the States start the process of developing nutrient TMDLs and/or numeric nutrient criteria there is a need for a comprehensive mechanistic model that can be used to assess multiple critical endpoints that are associated with nutrients. The Water Quality Analysis Simulation Program (WASP) has these capabilities. This proposal is to make modifications and enhancements to the WASP user interface to greatly enhance its ability to aid a user in developing a scientifically defensible model. These enhancements will allow Region 4 and its partner States to develop TMDLs in their priority areas according to their 303(d) Vision and Corresponding programs. Region 4 is currently working with our State Partners applying and training them in the use of WASP to develop nutrient TMDLs for their State. Furthermore, WASP is used throughout the United States for the development of TMDLs and WLAs.

Task Description: This task will make modifications and enhancements to the WASP user interface to greatly enhance its ability to aid a user in developing a scientifically defensible model(s). These enhancements will allow WASP Users to develop water quality models more rapidly accessing detailed river geometry and input data from the web. It is envisioned that the GIS information will be assembled and processed as plugin to QGIS. QGIS is a free and open-source cross-platform desktop geographic information system application that supports viewing, editing, and analysis of geospatial data. The QGIS plugin will download, process and communicate with the WASP Graphical User Interface.

1. **Model Segmentation**: there currently is a BASINS plugin that utilizes the National Hydrography Dataset (NHDPlus) to develop WASP riverine networks. Given the uncertainty surrounding BASINS it would be ideal to build this functionality into the WASP Interface. Propose to have the WASP interface:
   - Download and process NHDPlus Dataset from the Web
   - Select riverine section to model with WASP
   - Develop model network segmentation based upon modeler defined criteria
   - Populate segment information and flow path information in the user interface

2. **Flow Information**: because WASP is a time variable continuous simulation model it, relies on time series of flows. Typically, the time series of flows are obtained from USGS gages or watershed models. WASP currently interfaces easily with watershed models like HSPF and LSPC via a database linkage. Using methodology much like what is described above:
   - Download the location of USGS gages nearest to the WASP model segmentation
   - Assign USGS gages to WASP model boundary segments
   - Download flow data for time domain of the WASP model simulation
   - Perform appropriate unit conversions and/or area weighting to represent flows in the water quality model

3. **Meteorological Data:** taking the same approach that is outlined above, the interface would be modified to accommodate access to meteorological data via the web.
   - Download the location of NCDC and NLDAS meteorological stations

- Download all applicable data for WASP (Solar Radiation, Cloud Cover, Air Temperature, Dew Point, Wind Speed)
- Process downloaded data into the user interface making appropriate units conversion

4. **Download Observed Data from Water Quality Data Portal:** the user interface will be enhanced to access available water quality monitoring data from the water quality data portal.
   - Query specific monitoring stations and data from STORET, NWIS and STEWARDS database
   - Process the data to be used as boundary condition concentrations for input
   - Process the data to be used in calibrating the model.

Deliverable: The deliverable shall be all developed and modified interface source code updated in the WASP Interface source code repository and a successfully compiled and built WASP installation package.

Technical Expertise Required: The key technical individual(s) who work on this assignment shall have extensive working knowledge of the WASP graphical user interface source code.

TASK 5 – General Surface Water Quality Modeling Support

EPA's Water Modeling Workgroup (WMW) works to improve access to surface water quality modeling resources to support EPA water programs. WMW may need support on work on surface water quality modeling issues beyond those described in Tasks 3 and 4. Such support could include, but is not necessarily limited to, collection of existing information on modeling resources; assessment, testing, or creation of model code; and development of materials summarizing other types of information. The contractor shall provide support as specified through written technical direction from the EPA WACOR. EPA estimates that the contractor shall expend up to approximately 90 hours on this Task.

E. SCHEDULE OF BENCHMARKS & DELIVERABLES:

Task/ Subtask	DELIVERABLE	Schedule
1	**Work Plan**	As per Contract EP-C-14-016 requirements
2a.	**QAPP**	Due within 15 days after Work Plan submittal
2b.	**Revised QAPP reflecting EPA comments, if needed**	Due within 10 days of receipt of EPA comments on initial submission
2c.	**Monthly reports of QA work performed (may be included in Contractor's monthly progress report)**	Monthly throughout WA period of performance

3.	**WASP Graphical User Interface Enhancement – Lake Model: Source Code and Installation Package**	Due June 30, 2019
4.	**Geographical Processing of WASP Specific Model Data: Source Code and Installation Package**	Due June 30, 2019
5.	**General Surface Water Quality Modeling Support**	Due as requested by the EPA WACOR via written technical direction

Draft written deliverable(s) for review by the EPA WACOR shall be prepared in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables.

Final written deliverable(s) shall be furnished in accordance with the schedule in the WA Schedule of Benchmarks and Deliverables, after written comments are received from the EPA WACOR.

TRAVEL
No travel is anticipated under this work assignment.

PRINTING
All copying and printing shall be accomplished within the limitations of the printing clause of the contract.

CONTRACTOR IDENTIFICATION
Contractor personnel shall clearly identify corporate affiliation at the start of any meeting or training workshop. While attending EPA-sponsored meetings, conferences, symposia, etc., or while on a Government site, Contractor personnel shall wear a badge that identifies the individual as a contractor employee. Contractor personnel are strictly prohibited from acting as a representative of the Agency meetings, conferences, symposia, etc.

MEETINGS, CONFERENCES, TRANINING EVENTS, AWARD CEREMONIES AND RECEPTIONS
All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA Contract Level COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA Contract Level COR.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-26

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Use of Bioassessment Informati

Contractor	Specify Section and paragraph of Contract SOW
TETRA TECH, INC.	3.3, 3.4, 3.10

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 08/03/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Susank Jackson (Signature) (Date)		Branch/Mail Code: Phone Number: 202-566-1112 FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Courtney Stallworth (Signature) (Date)		Branch/Mail Code: Phone Number: 513-487-2002 FAX Number:

PERFORMANCE WORK STATEMENT
CONTRACT EP-C-14-016
WORK ASSIGNMENT 4-26

Title: Use of Bioassessment Information and Tools to Support Water Quality Management Programs

Work Assignment Contracting Officer Representative (WACOR):
Susan Jackson
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Alternate WACOR:
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Contract PWS: 3.3, 3.4, 3.10

Period of Performance: August 3, 2018 – June 30, 2019

The purpose of this work assignment is to support development of biological assessment indicators, biological condition gradient and biological criteria by Virginia, West Virginia and Maryland water quality management programs (task 3).

Background Information:
The Clean Water Act (CWA) directs EPA to restore and maintain the biological integrity of the Nation's waters. Under the CWA, the EPA has established a Water Quality Standards (WQS) Program to help achieve this objective. The EPA is developing and testing methods to support incorporation of bioassessment information, methods and approaches, such as the Biological Condition Gradient (BCG), into EPA, State and Tribal Water Quality Management Programs.

The Virginia Department of Environmental Quality (VDEQ) conducted a calibration exercise in 2015-2016 to develop a BCG in the Central Appalachian ecoregion (69) of Virginia, West Virginia, and Kentucky. Additional model evaluations were conducted in the Northern Piedmont ecoregion (64). The BCG calibration resulted in models for

macroinvertebrates and fish that were precise in replicating expert ratings of biological condition. These calibrations were intended as pilot projects to test feasibility of BCG calibrations statewide and region wide, feasibility of both VA-specific calibrations and feasibility of applying models across state lines and state programs. With the successful pilot project completed, VDEQ is now evaluating the application of the BCG and attribute assignments to inform development of biological indices throughout the state and region.

Prior to biological index development, the taxonomic attributes for fish and macroinvertebrates need to be explored to determine whether statewide attributes or regional attributes can be applied. Ecoregion-specific attributes were assigned in the previous exercises. Instead of assigning ecoregion-specific attributes for the BCG expansion, it would be more efficient to determine whether attribute assignments would apply statewide or to broader regions of the state and region. This task provides for contractor support to develop and test attributes in relation to natural and stressor conditions in ecoregions in Virginia, including shared ecoregions with West Virginia and Maryland.

If needed for purposes of technical clarification, use of technical direction will be in writing and forwarded to the contracting officer.

Quality Assurance:
Tasks 2 in this work assignment requires the use of existing data. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall comply with the EPA (SHPD) approved Tetra Tech QMP. The task-specific quality assurance requirements for use of existing data should follow the quality assurance requirements for use of existing data as described in OST's *Detailed Guidance for QAPP Elements in an Existing Data Project*. If needed, the contractor shall hold a conference call with the EPA WACOR to discuss any quality assurance issues needing clarification.

The project specific quality assurance requirements shall be addressed in the work plan and monthly progress reports as specified under Task 1. Any additional quality assurance requirements shall be addressed in the work plan and monthly progress reports. A final QA statement detailing the QA/QC procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

If model development is necessary, the contractor also shall fulfill the requirements described in National Risk Management Research Laboratory (NRMRL) QAPP Requirements for Research Model Development and Application Projects (10/2008) for applicable areas of Task 2. The NRMRL QAPP requirements are included in Appendix A of this work assignment.

Information Quality Guidelines & Information Quality Review
The contractor shall ensure the products developed under this work assignment comply with EPA's Quality System and other related QA policies, the Office of Water's Quality Management Plan. The contractor shall ensure that the information in the products meets the standards of "Objectivity", "Integrity", "Utility", "Reproducibility" and

"Transparency" as described in the OW Information Quality Guideline (IQG) for each deliverable from this work assignment as they may be used in Agency decision-making and/or shall be a publicly available document and provide a memorandum describing how the planned product(s) developed meet EPA's & OW's Information Quality Guidelines. As part of that memo, the contractor shall document the quality assurance procedures used in developing the deliverables under this Work Assignment. The contractor shall provide the memo at the time it delivers the Final Summary Report. As directed by the WACOR via written technical direction, the contractor shall meet with the WACOR (through teleconference) to discuss the Guidelines and the contractor's role in completing the memo and OW IQG checklist.

Performance Work Statement (PWS):

Task 1: Monthly Progress Reports and Administrative Support
The contractor shall develop a work plan to address tasks in this work assignment. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. All P levels, hours and total dollars for each task shall be provided, and other direct costs greater than $100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. QA procedures for data use and analyses, monthly progress reports and final reports shall be followed as described above in Quality Assurance Section. Monthly financial reports shall include a table with the invoice LOE and costs broken out by the tasks in this work assignment.

Task 2: Development of Regional Attribute Assignments
The contractor shall provide technical support to the USEPA WACOR to analyze databases provided by Virginia, Maryland, West Virginia to define response stressor relationships across difference ecological regions and assign BCG attributes for tolerance to different species. For example, there might be different BCG attribute assignments for sensitivity to stressors for mountain, Piedmont, and coastal plains settings because the stressors and acclimation conditions might differ among such regions. Specific tasks shall include:

1. Develop spreadsheets and Shiny app (R code) using data sets (benthic invertebrates and fish) and analyses provided by Virginia bioassessment program in collaboration with Maryland and West Virginia bioassessment programs.

2. Facilitate up to 2 webinars per assemblage (benthic macroinvertebrate and fish assemblages) to present results to the state and cooperating academic scientists and to elicit review and comment, including identifying and then reconciling discrepancies in attribute assignments and stressor conditions. The results of the

analysis shall relate stressors to taxa within each attribute group and among natural regions or classes.

3. Write report: The contractor shall summarize the attribute assignment process, results, and application.

Travel: There is no travel required for this task.

Deliverable, March 1, 2019: Report on attribute assignment process, results, and application.

Deliverables and Schedule

In any documentation, the contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources, and data that support the results and any recommendations. All documentation prepared for public release shall be 508 compliant.

Task 1: Work plan

Workplan for review and approval	Per Contract Requirements

Task 2: Development of Regional Attribute Assignments

Report on attribute assignment process, results, and application	March 1, 2019

Appendix A National Risk Management Research Laboratory (NRMRL) QAPP Requirements for Research Model Development and Application Projects (10/2008)[1]

General Requirements: Include cover page, distribution list, approvals, and page numbers.

1. COVER PAGE (MODEL DEVELOPMENT AND MODEL APPLICATION)

   Include the Division/Branch, project title, revision number, EPA technical lead, QA category, organization responsible for QAPP preparation, and date.

2. PROJECT DESCRIPTION AND OBJECTIVES (MODEL DEVELOPMENT AND MODEL APPLICATION)

   In this document, "project" can mean (a) development or substantial modification of a model for application to address a general problem; (b) application of an existing model (including minor modification to the existing model) to address a specific problem; or (c) a development or substantial modification and application of a model to address a specific problem.

   2.1. State the purpose of the project and list the project objective(s). Indicate whether a new model will be developed or an existing model will be used.

   2.2. Describe the problem, the data to be generated by the model, how the data shall be used to address the problem, and the intended users of the data. Describe the environmental system/setting to be modeled, where the model shall be applied, and the circumstances and scenarios to be considered for the modeled system.

3. ORGANIZATION AND RESPONSIBILITIES (MODEL DEVELOPMENT AND MODEL APPLICATION)

   3.1. Identify all project personnel, including QA, and related responsibilities for each participating organization, as well as their relationship to other project participants.

   3.2. Include a project schedule that includes key milestones.

4. MODEL SELECTION (MODEL APPLICATION ONLY)

   4.1. Discuss model selection with respect to how it shall be used and how it is consistent with the project objectives. Include fundamental details such as whether the model shall be used to predict the world beyond the model or in scenario analysis of the model itself. Describe the limits to where the model is applicable.

   4.2. Provide a description of the model attributes/capabilities required for the project. This description should include hardware requirements and restrictions. Provide an overview of the candidate model attributes.

   Model origin and its original purpose, if applicable

   Model structure (e.g., stochastic vs. deterministic, structural framework)

   Parameters and variables

   The algorithms and equations that have been developed to support the model theory, along with the sources of the algorithms

   Spatial extent (individual, group, population)

   Spatial resolution (location independent/dependent, dimensionality)

[1] http://www.epa.gov/nrmrl/qa/pdf/ResearchModelDevandAppQAPPNRMRLrev0.pdf

Temporal extent (length of modeling period)

Temporal resolution (time step)

4.3. Identify the model to be used or, if the model has not yet been selected, describe the process to be used or the selection of an existing model.

4.4. Identify specific requirements for application of the selected model for this specific purpose (e.g., current and appropriate data, parameter values, assumptions).

4. MODEL DESIGN (MODEL DEVELOPMENT ONLY)

4.1. Describe the conceptual model(s) for the system, including model parameters.

4.2. Identify algorithms and equations that have been developed to support the model theory, or if such equations are not already available, describe the process used to develop these equations.

4.3. Specify required sources for model databases and any requirements for these data (e.g., quality, quantity, spatial, and temporal applicability). If data sources are not currently known, describe the criteria used to identify sources. Describe how any data gaps shall be filled.

5. MODEL CODING (MODEL DEVELOPMENT ONLY)

5.1. Discuss the requirements for model code development, where applicable.

5.2. Identify computer hardware and software requirements.

5.3. Discuss requirements for code verification.

6. MODEL CALIBRATION (MODEL DEVELOPMENT AND MODEL APPLICATION)

Calibration is the process of adjusting model parameters within physically defensible ranges until the resulting predictions give the best possible or desired degree of fit to the observed data. Calibration should be applied each time the model is modified.

6.1. Discuss how the model shall be calibrated.

6.2. Identify the type and source of data (e.g., new data, existing data, professional judgment, expert opinion elicitation) that shall be used to calibrate the model, including any requirements for the data (quality, quantity, and spatial and temporal applicability). If data sources are not currently known, describe the criteria used to identify sources.

6.3. Specify acceptance criteria which need to be met for the difference between predicted and observed data during model calibration, where applicable. The statistical methods (e.g., goodness-of-fit, regression analysis) or expert judgment to be used should also be discussed.

7. MODEL VERIFICATION (MODEL DEVELOPMENT AND MODEL APPLICATION)

Verification consists of comparing the predictions of a calibrated model with available data that were not used in the model development and calibration.

7.1. Discuss the approach to be used for model verification. Describe how the verification is appropriate based on the model's purpose. Identify the type and source of data (e.g., new data, existing data, synthetic test data sets, professional judgment, expert opinion

elicitation) that shall be used to verify the model. If data sources are not currently known, describe the criteria used to identify sources.

7.2. Discuss the characterization of model uncertainty (model framework, model input, and model applicability) and sensitivity (model application only).

7.3. Describe any requirements (quality, quantity, and spatial and temporal applicability) for the data that shall be used to verify the model.

7.4. Describe the approach used to determine if the independent data verify the model predictions. Specify the criteria which need to be met for the difference between predicted and observed data for the model to be considered to be verified. Discuss any statistical methods to be used (e.g., goodness-of-fit, regression analysis).

8. MODEL EVALUATION (MODEL DEVELOPMENT AND MODEL APPLICATION)

8.1. List and describe the qualitative or quantitative assessment process to be used to generate information to determine whether a model and its analytical results are of a quality sufficient for the intended use.

8.2. List and describe any independent/external evaluation and review of the model and model design, such as scientific peer review.

9. MODEL DOCUMENTATION (MODEL DEVELOPMENT AND MODEL APPLICATION)

Specify the requirements for model documentation. Good documentation includes:

Final model description, final model specifications (model development only), hardware and software requirements, including programming language, model portability, memory requirements, required hardware/software for application, data standards for information storage and retrieval

The equations on which the model is based (model development only)

The underlying assumptions

Flow charts (model development only)

Description of routines (model development only)

Data base description

Source code (model development only)

Error messages (model development only)

Parameter values and sources

Restrictions on model application, including assumptions, parameter values and sources, boundary and initial conditions, validation/calibration of the model, output and interpretation of model runs (model development only)

The boundary conditions used in the model

Limiting conditions on model applications, detail where the model is or is not suited

Changes and verification of changes made in code

Actual input data (type and format) used

Overview of the immediate (non-manipulated or –post processed) results of the model runs (model application only)

Output of model runs and interpretation

User's guide (electronic or paper)

Instructions for preparing data files (model development only)

Example problems complete with input and output

Programmer's instructions

Computer operator's instructions

A report of the model calibration, validation, and evaluation (model development only)

Documentation of significant changes to the model

Procedures for maintenance and user support, if applicable

10. REPORTING (MODEL DEVELOPMENT AND MODEL APPLICATION)
11. List and describe the deliverables expected from each project participant.
12. Specify the expected final product(s) that shall be prepared for the project (e.g., journal article, final report).
13. REFERENCES

Provide the references either in the body of the text as footnotes or in a separate section.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-27

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Training Materials for Integra

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/03/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Laura Bachle (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-2468 FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2002 FAX Number:

Performance Work Statement
EPA Contract EP-C-14-016
Work Assignment 4-27

TITLE: Training Materials for Integrating Green Stormwater Infrastructure, Stormwater Management and Watershed Protection into Natural Hazard Mitigation Plans

PERFORMANCE PERIOD: July 3, 2018 through June 30, 2019

ABSTRACT: The purpose of this work is to prepare basic background training materials that can be used by environmental or hazard mitigation specialists to demonstrate to their peers the link between water quality protection, watershed planning, source water protection, and flood risk management so that professionals engaged in this work can understand how they are related and they can enhance planning efforts when done together. Products shall assist professionals in preparing their planning documents to result in mutual benefits to water resource protection, water programs integration, and hazard mitigation.

BACKGROUND: The Office of Wetlands, Oceans, and Watersheds, Watershed Restoration and Protection Division, Nonpoint Source Management Branch is tasked with disseminating information on Low-Impact Development, Stormwater Management, Green Stormwater Infrastructure (GSI) and Low-Impact Development (LID), and Watershed Protection to encourage communities to use these practices to sustainably protect water quality and reduce nonpoint source pollution. GSI and LID have been established to achieve multiple benefits when implemented as part of State and local planning. FEMA policy encourage GSI/LID as a hazard mitigation tool, adding ecosystem services values in the Benefit/Cost analysis used in FEMA funding. FEMA and EPA work together to assist state and local governments on a variety of initiatives related to hazard mitigation and climate resiliency.

The following definitions apply for this Performance Work Statement (PWS):

- GSI -Site-scale to landscape scale practices, natural or constructed, to infiltrate stormwater as close to where it falls as is feasible, including urban, suburban, rural, and agricultural (i.e. soil health).
- LID - Site planning and development practices to minimize impacts to natural hydrology.

The overall goal of this effort is to encourage use of GSI/LID as a standard tool in Hazard Mitigation Plans. The objectives of this effort are to: 1) Enable hazard mitigation funds and resources to be directed to GSI/LID projects when those projects can provide flood damage reduction, water quality, and source water protection benefits; 2) help institutionalize GSI/LID in hazard risk management planning while emphasizing its water quality benefits.

The outcome of this Work Assignment (WA) is to provide information to professionals working in hazard mitigation and water quality on the following:

- How these practices can also help reduce many hazards to public health and property;
- Why communities should consider including these techniques as in their Hazard Mitigation Plan.

SCOPE OF WORK – TASKS

The contractor shall prepare fact sheets with specific recommendations in a handout-ready and webinar-ready format, to assist professionals in communicating to other professionals in incorporating GSI/LID stormwater management and watershed protection into hazard mitigation planning, specifically into their FEMA Hazard Mitigation Plan. The specific topics to be addressed in this PWS are listed below; other subject areas may be authorized via written technical direction.

Task 1. Quality Management Plan, QAPP and progress reports

1.1 Quality Assurance (QA) is an important component of EPA's work to assure that minimum quality standards are attained. The contractor shall document the processes for Quality Assurance that it will follow in a QAPP. The QAPP shall document the contractor's processes for assuring quality, e.g., standards for accepting and citing existing information (most recent literature, acceptable sources, online resources) method for resolving conflicts in data or information; determining and documenting deviations from processes, (e.g., acceptance criteria).

There shall be a kick-off meeting at the beginning of the WA and conference call at least monthly. At the kick-off meeting the QA protocols shall be discussed. Completion of the QAPP is required prior to beginning project work other than the kick-off meeting.

During implementation, the contractor shall immediately notify the EPA TOCOR of any QA problems encountered that may impact the performance of this work, with recommendations for corrective action. The contractor shall provide EPA with monthly reports of QA-related activities. These monthly QA reports shall identify QA activities performed to support implementation, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the contractor shall include this as a part of the contract-required monthly financial/technical progress report. If no QA-related activities were performed, then this shall be noted in the progress report. In order to comply with this requirement, the contractor shall follow the applicable QAPP consistent with *EPA Requirements for Quality Assurance Project Plans: EPA QA/R-5* (**http://www.epa.gov/quality/qs-docs/r5-final.pdf**). All QA documentation prepared under this WA shall be considered non-proprietary, and shall be made available to the public upon request. The contractor shall immediately notify the EPA WACOR of any QA problems encountered that may impact performance, with recommendations for corrective action.

Task 1 Transmittals/Deliverables:

a. The contractor shall provide a draft QAPP, and incorporate EPA comments into revisions. This shall be completed prior to initiating project work.
b. The contractor shall transmit monthly progress reports, including any QA-related activities.
c. The contractor shall notify the EPA WACOR at any time during the WA if changes to the QS are warranted (e.g., due to organizational changes, revised technical approaches). The contractor shall document any revisions to the QA processes in a revised QAPP and submit the revised QAPP to the EPA COR for EPA review and approval.

Task 2. "Kick Off" Meeting

2.1. Prior to beginning work, the WACOR will schedule a kick-off meeting, by phone or in person, with the contractor to discuss the tasks, the goals, and to review the schedule of benchmarks, deliverables and milestones within 10 days of award. The contractor shall furnish meeting notes to memorialize any clarifications, including quality assurance protocols, time and day of monthly conference calls, and other

logistical matters.

Task 2 Transmittals/Deliverables (per project):

2.1 Transmittal of meeting notes within 5 business days of kick-off meeting.

Task 3. Work Plan

The detailed workplan shall include a description of: 1) proposed staff; 2) number of hours and labor classification for each task, to include both prime and subcontractor labor if applicable; 3) list of deliverables, including meetings, with due dates; 4) list of secondary data to be used (reports, weblinks, contacts, specific Hazard Mitigation Plans) suitable for contractor updating as the project progresses. The contractor shall schedule a two-hour meeting with the WACOR to review the draft work plan.

All reports and other written materials shall be provided first in draft form. Upon receipt of comment from the EPA WACOR, the contractor shall revise the report and distribute final copies as stated in the PWS. Note that EPA may need to revise the dates and content for specific deliverables under Task 5 due to unanticipated issues regarding EPA program priorities. Revisions will be provided in written technical direction.

Task 3 Transmittals/Deliverables

3.1 Transmittal- Draft Work Plan within 15 business days of kick-off meeting

3.2 Deliverable- Final Work Plan within 10 days of EPA review/comment of draft work plan

Task 4. Orientation

In addition to the qualifications, the contractor shall allocate time at the beginning of this contract to become familiar with EPA provided information on the following: 1) Four recently completed EPA-FEMA pilot projects; 2) Background on the main watershed-planning-for-water-quality programs (such as 319, TMDL, nonpoint source), and the Source Water Protection Program ; 3) examples of EPA-funded green infrastructure projects with flood mitigation benefits; 4) State and Local mitigation planning as relates to stormwater and green infrastructure; 5) Funding as it relates to green infrastructure; 6) Reports on innovative solutions for drought and flooding as relates to green infrastructure. The contractor shall schedule a two-hour meeting with the WACOR to identify data gaps after initial contractor research.

Task 5. Fact Sheets

The contractor shall produce up to eight and no more than ten individual "fact sheets" on the following topics. Each shall be in a stand-alone, handout-ready format, with bulleted recommendations followed by concise text and technical graphics explaining the topic. All information shall be in a web-ready format. The contractor shall also produce a webinar-ready powerpoint on the entire suite of fact sheet subjects. Additional information by web search and telephone interviews may be needed to identify approaches used by other communities or identify potential example hazard mitigation plans. The contractor shall submit project documentation including telephone contacts and logs and technical resource documents for any additional information collection completed. In outlining each topic fact sheet, the contractor shall cite the source(s) to be used for content development or identify where additional data sources are needed. It is anticipated that simple technical graphics, such as matrix charts with symbols, shall be needed for each fact sheet. Draft fact sheets can have more text than is anticipated in the final deliverable.

Refinement and editing shall be done at the prefinal and final stage. This process will enable more ideas to be captured, some of which may later be eliminated, and reduce costs of repeated stages of editing and refinement.

The contractor shall schedule a meeting with the COR after the draft fact sheet preparation and after the prefinal draft fact sheet preparation. The contractor shall provide meeting notes after each meeting. Overview of content to start framing each fact sheet is presented in Table 1. In addition to the content in Table 1, the contractor shall prepare brief text to convey the message or caveats, and add additional information as developed during the project. Fact sheet topics are to include the following:

1. How poor stormwater management, including non-point source pollution and excess runoff, and poor watershed planning contributes to specific types of natural hazards, the stormwater management practices that can help mitigate these hazards, and the ecosystem services that the stormwater management practice or system can provide.
2. How watershed planning for water quality protection (such as CWA 319, TMDLs) is conducted, how source water protection for drinking water works, the importance of protecting naturally-occurring wetlands in watershed planning, and how these subjects relate to flood risk management. This understanding can provide for more efficient, integrated water resources planning.
3. Potential funding and financing options, and how potential funding and financing options increase with multi-objective watershed and risk management planning.
4. How stormwater management (and GSI/LID), source water protection, and watershed planning can be integrated into Hazard Mitigation Plans.
5. Relevant Community Rating System credits from FEMA and how they relate to elements of watershed planning for water quality and source water protection planning
6. Four existing examples of projects mitigating different natural hazards (flood, drought, stream erosion, harmful algal blooms, etc) with GSI/LID. The project must, have available information on cost/benefit and ideally a comparison to grey alternatives. Hybrid gray-green is acceptable.
7. Three examples of Hazard Mitigation Plans that include, at a minimum, GSI/LID policies and practices.
8. An overview of each the four EPA/FEMA pilot projects for integrating GSI/LID into Hazard Mitigation Plans, and the lessons learned from the pilots.

Additional details regarding fact sheet content is provided in Table 1 (below).

Present the Power Point presentation on a one-hour EPA webinar. The webinar format shall be Adobe Connect. The contractor shall present remotely. **[NOTE: EPA WACOR *may change this to creating a training module for the EPA Watershed Academy online.*]**

Task 5 Transmittals/Deliverables

5.1 Transmittal-Draft Fact Sheets according to Work Plan Schedule

5.2 Transmittal-Pre-Final Fact Sheets according to Work Plan Schedule

5.3 Deliverable- Final Fact Sheets according to Work Plan Schedule

5.4 Transmittal- Draft powerpoint presentation according to Work Plan Schedule

5.5 Transmittal- Prefinal powerpoint presentation according to Work Plan Schedule

5.6 Deliverable- Final powerpoint presentation

Task 6. Additional Fact Sheets

Via written technical direction, the additional fact sheets on related topics or expanding existing topics may be included in this PWS.

WORK ASSIGNMENT EPA CONTACTS

WACOR
Laura Bachle
1301 Constitution Ave NW
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202-566-2468
Bachle.laura@epa.gov

AWACOR
Lisa Hair
1301 Constitution Ave NW
Mail Code: 4503T
Washington, DC 20004
202-566-1043
Hair.lisa@epa.gov

TRAVEL

There is no travel anticipated under this WA. However, if travel becomes necessary, it shall be in accordance with the travel clause of the contract, and shall be approved.

MEETINGS, CONFERENCES, TRAINING EVENTS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR. The total costs for all activities related to each conference, meeting, and training event described in this work assignment (WA 4-27) may exceed $20,000. An approved 5170 has been provided.

508 COMPLIANCE: All documents prepared for release to the public shall be 508 compliant.

TRANSMITTALS AND DELIVERABLES

Table 1. Overview of Content for Each Fact Sheet	
1	**Specific types of natural hazards caused by non-point source pollution, excess runoff, poor stormwater and watershed management, and the GSI/LID management practices that can help mitigate these hazards, and the ecosystem services these practices may provide.** This Fact Sheet is intended to be a persuasive presentation of information to establish that GSI/LID can help mitigate hazards, the extent to which they may provide mitigation, and that GSI can be a component of each type planning: stormwater, watershed, source water protection, and flood risk management. a) Address hazards: Wildfire, flood, landslide, drought, stream erosion, harmful algal blooms, violation of state water quality standards for pollutants including temperature, increased drinking water treatment costs, fish kills, fish and shellfish contamination, increased sediment dredging in reservoirs and river channels, urban heat island, and increased social stress (from nuisance flooding and lack of urban parks), how poor watershed planning or land use planning contributes to flood risk. b) Include in matrix table format the practices that may help mitigate each hazard: GSI/LID range of practices, including regional infiltration basins, stream restoration including pooling and meandering to enhance infiltration, stream buffers, using park green space and ball fields to store and infiltrate, daylighting storm drains, building and zoning codes, protecting naturally occurring wetlands, wetland restoration, agricultural soil health practices. Provide a graphic or table on the general effectiveness the practice where feasible (for example, many GSI/LID practices are designed to provide infiltration of the first inch or two for water quality protection, therefore, depending on the extent of practices in the watershed, may only provide flood mitigation for small nuisance flooding events, and peak flow reduction may not be observed in storms over 10 to 25-year return intervals). References should be cited for background on the practices and references should be cited for practices' role in mitigating the hazards. c) Include in a matrix table the ecosystem services that may be provided with each stormwater management practice. Preliminary work has been for EPA/FEMA that will be provided to the contractor. Ecosystem services cited in the preliminary work includes floodwater storage wildfire resistance, steep slope stability, cultural and livability services, freshwater provisioning, sediment and soil retention, and stormwater infiltration, and habitat. Cite references and value estimates (for example, from FEMA's ecosystem services default valuation) where available.

	d) Present at least two examples, where available, of one of the hazards in a locality that: 1) has a likelihood of being caused by poor stormwater or watershed management 1) resulted in human health or property risk or damage; 2) include an estimation of extent of the risk or financial loss/mitigation cost; and 3) the mitigation done and any subsequent action. e) Present the general areas in the US, for example on a State scale, for those hazards that have occurred, or where conditions are present for the hazard to occur, for those hazards that are tied to specific regions, such as harmful algal bloom outbreaks or drought. Presentation may be in the form of a US map for each hazard, or other method. Provide citation for each geographic reference. f) List up to five suggested references for additional information.
2	**How watershed planning for water quality protection (including CWA 319, nonpoint source protection, and TMDLs) is conducted, how source water protection for drinking water works, the importance of protecting naturally-occurring wetlands in watershed planning and how they relate to flood risk management to provide more efficient, integrated water resources planning.** This fact sheet is intended to demystify the different planning processes for those who are not familiar with them all, and show how they can be more efficiently completed if they done together. a) Provide a brief overview of the purpose of each planning type, what entity generally does the plan and therefore may have relevant information to share, and under what circumstances a community might initiate a plan. b) Prepare a matrix table of the steps in watershed planning for water quality protection, Source Water Protection planning, and flood risk management planning indicating which steps are, in general, common between the planning types. c) Prepare a matrix table of differences in the preparation of each plan type. d) Prepare a brief description of each of steps in the matrix table, linked to the matrix table in footnote format. e) Provide short case descriptions of two examples of communities that combined at least two of the plan types in their Hazard Mitigation Plan or other comprehensive watershed plan.

	f) List up to five suggested references for additional information.
3	**Potential funding and financing options.** This fact sheet is intended to show that more funding and financing options become available when instream water quality, drinking water source protection, wetlands protection, and other ecosystem services are project objectives, compared to flood damage reduction alone. a) Prepare a matrix(s) of major funding options for each plan type for planning, implementation or construction, and maintenance. Include federal, state, local, nonprofit, and public private partnerships. b) Provide brief descriptions references for additional information for each funding type, linked to the main table in a footnote format. c) List up to five suggested references for additional information.
4	**How GSI/LID for stormwater management, source water protection, and watershed planning can be integrated into Hazard Mitigation Plans.** This fact sheet is intended to demonstrate: • to mitigation planners that GSI/LID, source water protection, and watershed planning for water quality fit appropriately in a Hazard Mitigation Plan framework; and • to stormwater, source water protection, and watershed professionals where their program elements can fit in a Hazard Mitigation Plan. a) Prepare table of typical activities in each of these sections of a local Hazard Mitigation Plan (44 CFR 201.6): Planning, Plan Content, Mitigation Strategy, and Plan Maintenance Process. Indicate which elements of stormwater planning, watershed planning, and source water protection planning could fit in each section. b) Provide brief descriptions for the elements of stormwater planning, watershed planning, and source water protection planning linked to the table in footnote format. c) List up to five suggested references for additional information.

5	**Relevant Community Rating System (CRS) credits from FEMA and where those creditable practices may already exist in, or benefit, watershed or source water protection planning efforts.** This fact sheet is intended to demonstrate that achieving CRS credits for GSI/LID and other water resource protection practices may also help with (do double-duty) implementing other local water programs, and that if these other programs already have these elements in place, that may give you a head start on CRS credit. a) Provide a matrix table of the relevant CRS credits (by name) (including but not limited to "green") for activities that may also be present in the other plans, and indicate which activities are also likely to present or beneficial in stormwater planning, watershed planning, or source water protection planning. b) Provide a table of the CRS credits cited in the above table by number and name, short description, and maximum credits available. c) Provide a table for each of the major activities of stormwater planning, watershed planning, and source water protection planning. In each table, provide a brief description of the element used in the table in 5(a). d) List up to five suggested references for additional information.
6	**Four existing examples of projects mitigating different natural hazards (flood, drought, stream erosion, harmful algal blooms, etc) with GSI/LID solutions that have available information on cost/benefit and, ideally, a comparison to grey alternatives.** This Fact Sheet is intended to provide supporting information that GSI stormwater planning and source water protection and 319 watershed planning can, in appropriate conditions, be a cost-effective or otherwise desirable component of hazard mitigation.

7	**Three examples of local or Regional Hazard Mitigation Plans that include at GSI/LID policies and practices, at a minimum.** This Fact Sheet is to highlight those municipalities or regional planning agencies that have taken the lead in this area, and to provide some examples that other communities may want to consider. a) For each HMP, at a minimum include how the local government came to include these elements, obstacles they encountered and how they overcame them, any benefits they expect to see from these approaches compared to solely conventional solutions, and excerpts from the text where appropriate with context added by contractor. b) Provide an overview of each the four EPA/FEMA pilot projects for integrating GSI into Hazard Mitigation Plans, and the lessons learned from the pilots
8	**An overview of each the four EPA/FEMA pilot projects for integrating GSI/LID into Hazard Mitigation Plans, and the lessons learned from the pilots.** This Fact Sheet is intended to present the approaches and lessons learned from four pilot efforts to help professionals start the process in their communities.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-27

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Training Materials for Integra

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
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Period of Performance: From 07/03/2018 To 06/30/2019

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1										
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5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Laura Bachle (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-566-2468
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-3133
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	513-487-2002
	FAX Number:	

Performance Work Statement
EPA Contract EP-C-14-016
Work Assignment 4-27

TITLE: Training Materials for Integrating Green Stormwater Infrastructure, Stormwater Management and Watershed Protection into Natural Hazard Mitigation Plans

PERFORMANCE PERIOD: July 3, 2018 through June 30, 2019

ABSTRACT: The purpose of this work is to prepare basic background training materials that can be used by environmental or hazard mitigation specialists to demonstrate to their peers the link between water quality protection, watershed planning, source water protection, and flood risk management so that professionals engaged in this work can understand how they are related and they can enhance planning efforts when done together. Products shall assist professionals in preparing their planning documents to result in mutual benefits to water resource protection, water programs integration, and hazard mitigation.

BACKGROUND: The Office of Wetlands, Oceans, and Watersheds, Watershed Restoration and Protection Division, Nonpoint Source Management Branch is tasked with disseminating information on Low-Impact Development, Stormwater Management, Green Stormwater Infrastructure (GSI) and Low-Impact Development (LID), and Watershed Protection to encourage communities to use these practices to sustainably protect water quality and reduce nonpoint source pollution. GSI and LID have been established to achieve multiple benefits when implemented as part of State and local planning. FEMA policy encourage GSI/LID as a hazard mitigation tool, adding ecosystem services values in the Benefit/Cost analysis used in FEMA funding. FEMA and EPA work together to assist state and local governments on a variety of initiatives related to hazard mitigation and climate resiliency.

The following definitions apply for this Performance Work Statement (PWS):

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- LID - Site planning and development practices to minimize impacts to natural hydrology.

The overall goal of this effort is to encourage use of GSI/LID as a standard tool in Hazard Mitigation Plans. The objectives of this effort are to: 1) Enable hazard mitigation funds and resources to be directed to GSI/LID projects when those projects can provide flood damage reduction, water quality, and source water protection benefits; 2) help institutionalize GSI/LID in hazard risk management planning while emphasizing its water quality benefits.

The outcome of this Work Assignment (WA) is to provide information to professionals working in hazard mitigation and water quality on the following:

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- Why communities should consider including these techniques as in their Hazard Mitigation Plan.

SCOPE OF WORK – TASKS

The contractor shall prepare fact sheets with specific recommendations in a handout-ready and webinar-ready format, to assist professionals in communicating to other professionals in incorporating GSI/LID stormwater management and watershed protection into hazard mitigation planning, specifically into their FEMA Hazard Mitigation Plan. The specific topics to be addressed in this PWS are listed below; other subject areas may be authorized via written technical direction.

Task 1. Quality Management Plan, QAPP and progress reports

1.1 Quality Assurance (QA) is an important component of EPA's work to assure that minimum quality standards are attained. The contractor shall document the processes for Quality Assurance that it will follow in a QAPP. The QAPP shall document the contractor's processes for assuring quality, e.g., standards for accepting and citing existing information (most recent literature, acceptable sources, online resources) method for resolving conflicts in data or information; determining and documenting deviations from processes, (e.g., acceptance criteria).

There shall be a kick-off meeting at the beginning of the WA and conference call at least monthly. At the kick-off meeting the QA protocols shall be discussed. Completion of the QAPP is required prior to beginning project work other than the kick-off meeting.

During implementation, the contractor shall immediately notify the EPA TOCOR of any QA problems encountered that may impact the performance of this work, with recommendations for corrective action. The contractor shall provide EPA with monthly reports of QA-related activities. These monthly QA reports shall identify QA activities performed to support implementation, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the contractor shall include this as a part of the contract-required monthly financial/technical progress report. If no QA-related activities were performed, then this shall be noted in the progress report. In order to comply with this requirement, the contractor shall follow the applicable QAPP consistent with *EPA Requirements for Quality Assurance Project Plans: EPA QA/R-5* (**http://www.epa.gov/quality/qs-docs/r5-final.pdf**). All QA documentation prepared under this WA shall be considered non-proprietary, and shall be made available to the public upon request. The contractor shall immediately notify the EPA WACOR of any QA problems encountered that may impact performance, with recommendations for corrective action.

Task 1 Transmittals/Deliverables:

a. The contractor shall provide a draft QAPP, and incorporate EPA comments into revisions. This shall be completed prior to initiating project work.
b. The contractor shall transmit monthly progress reports, including any QA-related activities.
c. The contractor shall notify the EPA WACOR at any time during the WA if changes to the QS are warranted (e.g., due to organizational changes, revised technical approaches). The contractor shall document any revisions to the QA processes in a revised QAPP and submit the revised QAPP to the EPA COR for EPA review and approval.

Task 2. "Kick Off" Meeting

2.1. Prior to beginning work, the WACOR will schedule a kick-off meeting, by phone or in person, with the contractor to discuss the tasks, the goals, and to review the schedule of benchmarks, deliverables and milestones within 10 days of award. The contractor shall furnish meeting notes to memorialize any clarifications, including quality assurance protocols, time and day of monthly conference calls, and other

logistical matters.

Task 2 Transmittals/Deliverables (per project):

2.1 Transmittal of meeting notes within 5 business days of kick-off meeting.

Task 3. Work Plan

The detailed workplan shall include a description of: 1) proposed staff; 2) number of hours and labor classification for each task, to include both prime and subcontractor labor if applicable; 3) list of deliverables, including meetings, with due dates; 4) list of secondary data to be used (reports, weblinks, contacts, specific Hazard Mitigation Plans) suitable for contractor updating as the project progresses. The contractor shall schedule a two-hour meeting with the WACOR to review the draft work plan.

All reports and other written materials shall be provided first in draft form. Upon receipt of comment from the EPA WACOR, the contractor shall revise the report and distribute final copies as stated in the PWS. Note that EPA may need to revise the dates and content for specific deliverables under Task 5 due to unanticipated issues regarding EPA program priorities. Revisions will be provided in written technical direction.

Task 3 Transmittals/Deliverables

3.1 Transmittal- Draft Work Plan within 15 business days of kick-off meeting

3.2 Deliverable- Final Work Plan within 10 days of EPA review/comment of draft work plan

Task 4. Orientation

In addition to the qualifications, the contractor shall allocate time at the beginning of this contract to become familiar with EPA provided information on the following: 1) Four recently completed EPA-FEMA pilot projects; 2) Background on the main watershed-planning-for-water-quality programs (such as 319, TMDL, nonpoint source), and the Source Water Protection Program ; 3) examples of EPA-funded green infrastructure projects with flood mitigation benefits; 4) State and Local mitigation planning as relates to stormwater and green infrastructure; 5) Funding as it relates to green infrastructure; 6) Reports on innovative solutions for drought and flooding as relates to green infrastructure. The contractor shall schedule a two-hour meeting with the WACOR to identify data gaps after initial contractor research.

Task 5. Fact Sheets

The contractor shall produce up to eight and no more than ten individual "fact sheets" on the following topics. Each shall be in a stand-alone, handout-ready format, with bulleted recommendations followed by concise text and technical graphics explaining the topic. All information shall be in a web-ready format. The contractor shall also produce a webinar-ready powerpoint on the entire suite of fact sheet subjects. Additional information by web search and telephone interviews may be needed to identify approaches used by other communities or identify potential example hazard mitigation plans. The contractor shall submit project documentation including telephone contacts and logs and technical resource documents for any additional information collection completed. In outlining each topic fact sheet, the contractor shall cite the source(s) to be used for content development or identify where additional data sources are needed. It is anticipated that simple technical graphics, such as matrix charts with symbols, shall be needed for each fact sheet. Draft fact sheets can have more text than is anticipated in the final deliverable.

Refinement and editing shall be done at the prefinal and final stage. This process will enable more ideas to be captured, some of which may later be eliminated, and reduce costs of repeated stages of editing and refinement.

The contractor shall schedule a meeting with the COR after the draft fact sheet preparation and after the prefinal draft fact sheet preparation. The contractor shall provide meeting notes after each meeting. Overview of content to start framing each fact sheet is presented in Table 1. In addition to the content in Table 1, the contractor shall prepare brief text to convey the message or caveats, and add additional information as developed during the project. Fact sheet topics are to include the following:

1. How poor stormwater management, including non-point source pollution and excess runoff, and poor watershed planning contributes to specific types of natural hazards, the stormwater management practices that can help mitigate these hazards, and the ecosystem services that the stormwater management practice or system can provide.
2. How watershed planning for water quality protection (such as CWA 319, TMDLs) is conducted, how source water protection for drinking water works, the importance of protecting naturally-occurring wetlands in watershed planning, and how these subjects relate to flood risk management. This understanding can provide for more efficient, integrated water resources planning.
3. Potential funding and financing options, and how potential funding and financing options increase with multi-objective watershed and risk management planning.
4. How stormwater management (and GSI/LID), source water protection, and watershed planning can be integrated into Hazard Mitigation Plans.
5. Relevant Community Rating System credits from FEMA and how they relate to elements of watershed planning for water quality and source water protection planning
6. Four existing examples of projects mitigating different natural hazards (flood, drought, stream erosion, harmful algal blooms, etc) with GSI/LID. The project must, have available information on cost/benefit and ideally a comparison to grey alternatives. Hybrid gray-green is acceptable.
7. Three examples of Hazard Mitigation Plans that include, at a minimum, GSI/LID policies and practices.
8. An overview of each the four EPA/FEMA pilot projects for integrating GSI/LID into Hazard Mitigation Plans, and the lessons learned from the pilots.

Additional details regarding fact sheet content is provided in Table 1 (below).

Present the Power Point presentation on a one-hour EPA webinar. The webinar format shall be Adobe Connect. The contractor shall present remotely. **[NOTE: EPA WACOR *may change this to creating a training module for the EPA Watershed Academy online.*]**

Task 5 Transmittals/Deliverables

5.1 Transmittal-Draft Fact Sheets according to Work Plan Schedule

5.2 Transmittal-Pre-Final Fact Sheets according to Work Plan Schedule

5.3 Deliverable- Final Fact Sheets according to Work Plan Schedule

5.4 Transmittal- Draft powerpoint presentation according to Work Plan Schedule

5.5 Transmittal- Prefinal powerpoint presentation according to Work Plan Schedule

5.6 Deliverable- Final powerpoint presentation

Task 6. Additional Fact Sheets

Via written technical direction, the additional fact sheets on related topics or expanding existing topics may be included in this PWS.

WORK ASSIGNMENT EPA CONTACTS

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TRAVEL

There is no travel anticipated under this WA. However, if travel becomes necessary, it shall be in accordance with the travel clause of the contract, and shall be approved.

MEETINGS, CONFERENCES, TRAINING EVENTS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR. The total costs for all activities related to each conference, meeting, and training event described in this work assignment (WA 4-27) may exceed $20,000. An approved 5170 has been provided.

508 COMPLIANCE: All documents prepared for release to the public shall be 508 compliant.

TRANSMITTALS AND DELIVERABLES

Table 1. Overview of Content for Each Fact Sheet	
1	**Specific types of natural hazards caused by non-point source pollution, excess runoff, poor stormwater and watershed management, and the GSI/LID management practices that can help mitigate these hazards, and the ecosystem services these practices may provide.** This Fact Sheet is intended to be a persuasive presentation of information to establish that GSI/LID can help mitigate hazards, the extent to which they may provide mitigation, and that GSI can be a component of each type planning: stormwater, watershed, source water protection, and flood risk management. a) Address hazards: Wildfire, flood, landslide, drought, stream erosion, harmful algal blooms, violation of state water quality standards for pollutants including temperature, increased drinking water treatment costs, fish kills, fish and shellfish contamination, increased sediment dredging in reservoirs and river channels, urban heat island, and increased social stress (from nuisance flooding and lack of urban parks), how poor watershed planning or land use planning contributes to flood risk. b) Include in matrix table format the practices that may help mitigate each hazard: GSI/LID range of practices, including regional infiltration basins, stream restoration including pooling and meandering to enhance infiltration, stream buffers, using park green space and ball fields to store and infiltrate, daylighting storm drains, building and zoning codes, protecting naturally occurring wetlands, wetland restoration, agricultural soil health practices. Provide a graphic or table on the general effectiveness the practice where feasible (for example, many GSI/LID practices are designed to provide infiltration of the first inch or two for water quality protection, therefore, depending on the extent of practices in the watershed, may only provide flood mitigation for small nuisance flooding events, and peak flow reduction may not be observed in storms over 10 to 25-year return intervals). References should be cited for background on the practices and references should be cited for practices' role in mitigating the hazards. c) Include in a matrix table the ecosystem services that may be provided with each stormwater management practice. Preliminary work has been for EPA/FEMA that will be provided to the contractor. Ecosystem services cited in the preliminary work includes floodwater storage wildfire resistance, steep slope stability, cultural and livability services, freshwater provisioning, sediment and soil retention, and stormwater infiltration, and habitat. Cite references and value estimates (for example, from FEMA's ecosystem services default valuation) where available.

	d) Present at least two examples, where available, of one of the hazards in a locality that: 1) has a likelihood of being caused by poor stormwater or watershed management 1) resulted in human health or property risk or damage; 2) include an estimation of extent of the risk or financial loss/mitigation cost; and 3) the mitigation done and any subsequent action. e) Present the general areas in the US, for example on a State scale, for those hazards that have occurred, or where conditions are present for the hazard to occur, for those hazards that are tied to specific regions, such as harmful algal bloom outbreaks or drought. Presentation may be in the form of a US map for each hazard, or other method. Provide citation for each geographic reference. f) List up to five suggested references for additional information.
2	**How watershed planning for water quality protection (including CWA 319, nonpoint source protection, and TMDLs) is conducted, how source water protection for drinking water works, the importance of protecting naturally-occurring wetlands in watershed planning and how they relate to flood risk management to provide more efficient, integrated water resources planning.** This fact sheet is intended to demystify the different planning processes for those who are not familiar with them all, and show how they can be more efficiently completed if they done together. a) Provide a brief overview of the purpose of each planning type, what entity generally does the plan and therefore may have relevant information to share, and under what circumstances a community might initiate a plan. b) Prepare a matrix table of the steps in watershed planning for water quality protection, Source Water Protection planning, and flood risk management planning indicating which steps are, in general, common between the planning types. c) Prepare a matrix table of differences in the preparation of each plan type. d) Prepare a brief description of each of steps in the matrix table, linked to the matrix table in footnote format. e) Provide short case descriptions of two examples of communities that combined at least two of the plan types in their Hazard Mitigation Plan or other comprehensive watershed plan.

	f) List up to five suggested references for additional information.
3	**Potential funding and financing options.** This fact sheet is intended to show that more funding and financing options become available when instream water quality, drinking water source protection, wetlands protection, and other ecosystem services are project objectives, compared to flood damage reduction alone. a) Prepare a matrix(s) of major funding options for each plan type for planning, implementation or construction, and maintenance. Include federal, state, local, nonprofit, and public private partnerships. b) Provide brief descriptions references for additional information for each funding type, linked to the main table in a footnote format. c) List up to five suggested references for additional information.
4	**How GSI/LID for stormwater management, source water protection, and watershed planning can be integrated into Hazard Mitigation Plans.** This fact sheet is intended to demonstrate: • to mitigation planners that GSI/LID, source water protection, and watershed planning for water quality fit appropriately in a Hazard Mitigation Plan framework; and • to stormwater, source water protection, and watershed professionals where their program elements can fit in a Hazard Mitigation Plan. a) Prepare table of typical activities in each of these sections of a local Hazard Mitigation Plan (44 CFR 201.6): Planning, Plan Content, Mitigation Strategy, and Plan Maintenance Process. Indicate which elements of stormwater planning, watershed planning, and source water protection planning could fit in each section. b) Provide brief descriptions for the elements of stormwater planning, watershed planning, and source water protection planning linked to the table in footnote format. c) List up to five suggested references for additional information.

5	**Relevant Community Rating System (CRS) credits from FEMA and where those creditable practices may already exist in, or benefit, watershed or source water protection planning efforts.** This fact sheet is intended to demonstrate that achieving CRS credits for GSI/LID and other water resource protection practices may also help with (do double-duty) implementing other local water programs, and that if these other programs already have these elements in place, that may give you a head start on CRS credit. a) Provide a matrix table of the relevant CRS credits (by name) (including but not limited to "green") for activities that may also be present in the other plans, and indicate which activities are also likely to present or beneficial in stormwater planning, watershed planning, or source water protection planning. b) Provide a table of the CRS credits cited in the above table by number and name, short description, and maximum credits available. c) Provide a table for each of the major activities of stormwater planning, watershed planning, and source water protection planning. In each table, provide a brief description of the element used in the table in 5(a). d) List up to five suggested references for additional information.
6	**Four existing examples of projects mitigating different natural hazards (flood, drought, stream erosion, harmful algal blooms, etc) with GSI/LID solutions that have available information on cost/benefit and, ideally, a comparison to grey alternatives.** This Fact Sheet is intended to provide supporting information that GSI stormwater planning and source water protection and 319 watershed planning can, in appropriate conditions, be a cost-effective or otherwise desirable component of hazard mitigation.

7	**Three examples of local or Regional Hazard Mitigation Plans that include at GSI/LID policies and practices, at a minimum.** This Fact Sheet is to highlight those municipalities or regional planning agencies that have taken the lead in this area, and to provide some examples that other communities may want to consider. a) For each HMP, at a minimum include how the local government came to include these elements, obstacles they encountered and how they overcame them, any benefits they expect to see from these approaches compared to solely conventional solutions, and excerpts from the text where appropriate with context added by contractor. b) Provide an overview of each the four EPA/FEMA pilot projects for integrating GSI into Hazard Mitigation Plans, and the lessons learned from the pilots
8	**An overview of each the four EPA/FEMA pilot projects for integrating GSI/LID into Hazard Mitigation Plans, and the lessons learned from the pilots.** This Fact Sheet is intended to present the approaches and lessons learned from four pilot efforts to help professionals start the process in their communities.

Performance Work Statement
EPA Contract EP-C-14-016
Work Assignment 4-27

TITLE: Training Materials for Integrating Green Stormwater Infrastructure, Stormwater Management and Watershed Protection into Natural Hazard Mitigation Plans

PERFORMANCE PERIOD: July 3, 2018 through June 30, 2019

ABSTRACT: The purpose of this work is to prepare basic background training materials that can be used by environmental or hazard mitigation specialists to demonstrate to their peers the link between water quality protection, watershed planning, source water protection, and flood risk management so that professionals engaged in this work can understand how they are related and they can enhance planning efforts when done together. Products shall assist professionals in preparing their planning documents to result in mutual benefits to water resource protection, water programs integration, and hazard mitigation.

BACKGROUND: The Office of Wetlands, Oceans, and Watersheds, Watershed Restoration and Protection Division, Nonpoint Source Management Branch is tasked with disseminating information on Low-Impact Development, Stormwater Management, Green Stormwater Infrastructure (GSI) and Low-Impact Development (LID), and Watershed Protection to encourage communities to use these practices to sustainably protect water quality and reduce nonpoint source pollution. GSI and LID have been established to achieve multiple benefits when implemented as part of State and local planning. FEMA policy encourage GSI/LID as a hazard mitigation tool, adding ecosystem services values in the Benefit/Cost analysis used in FEMA funding. FEMA and EPA work together to assist state and local governments on a variety of initiatives related to hazard mitigation and climate resiliency.

The following definitions apply for this Performance Work Statement (PWS):

- GSI -Site-scale to landscape scale practices, natural or constructed, to infiltrate stormwater as close to where it falls as is feasible, including urban, suburban, rural, and agricultural (i.e. soil health).
- LID - Site planning and development practices to minimize impacts to natural hydrology.

The overall goal of this effort is to encourage use of GSI/LID as a standard tool in Hazard Mitigation Plans. The objectives of this effort are to: 1) Enable hazard mitigation funds and resources to be directed to GSI/LID projects when those projects can provide flood damage reduction, water quality, and source water protection benefits; 2) help institutionalize GSI/LID in hazard risk management planning while emphasizing its water quality benefits.

The outcome of this Work Assignment (WA) is to provide information to professionals working in hazard mitigation and water quality on the following:

- How these practices can also help reduce many hazards to public health and property;
- Why communities should consider including these techniques as in their Hazard Mitigation Plan.

SCOPE OF WORK – TASKS

The contractor shall prepare fact sheets with specific recommendations in a handout-ready and webinar-ready format, to assist professionals in communicating to other professionals in incorporating GSI/LID stormwater management and watershed protection into hazard mitigation planning, specifically into their FEMA Hazard Mitigation Plan. The specific topics to be addressed in this PWS are listed below; other subject areas may be authorized via written technical direction.

Task 1. Quality Management Plan, QAPP and progress reports

1.1 Quality Assurance (QA) is an important component of EPA's work to assure that minimum quality standards are attained. The contractor shall document the processes for Quality Assurance that it will follow in a QAPP. The QAPP shall document the contractor's processes for assuring quality, e.g., standards for accepting and citing existing information (most recent literature, acceptable sources, online resources) method for resolving conflicts in data or information; determining and documenting deviations from processes, (e.g., acceptance criteria).

There shall be a kick-off meeting at the beginning of the WA and conference call at least monthly. At the kick-off meeting the QA protocols shall be discussed. Completion of the QAPP is required prior to beginning project work other than the kick-off meeting.

During implementation, the contractor shall immediately notify the EPA TOCOR of any QA problems encountered that may impact the performance of this work, with recommendations for corrective action. The contractor shall provide EPA with monthly reports of QA-related activities. These monthly QA reports shall identify QA activities performed to support implementation, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the contractor shall include this as a part of the contract-required monthly financial/technical progress report. If no QA-related activities were performed, then this shall be noted in the progress report. In order to comply with this requirement, the contractor shall follow the applicable QAPP consistent with *EPA Requirements for Quality Assurance Project Plans: EPA QA/R-5* (**http://www.epa.gov/quality/qs-docs/r5-final.pdf**). All QA documentation prepared under this WA shall be considered non-proprietary, and shall be made available to the public upon request. The contractor shall immediately notify the EPA WACOR of any QA problems encountered that may impact performance, with recommendations for corrective action.

Task 1 Transmittals/Deliverables:

a. The contractor shall provide a draft QAPP, and incorporate EPA comments into revisions. This shall be completed prior to initiating project work.
b. The contractor shall transmit monthly progress reports, including any QA-related activities.
c. The contractor shall notify the EPA WACOR at any time during the WA if changes to the QS are warranted (e.g., due to organizational changes, revised technical approaches). The contractor shall document any revisions to the QA processes in a revised QAPP and submit the revised QAPP to the EPA COR for EPA review and approval.

Task 2. "Kick Off" Meeting

2.1. Prior to beginning work, the WACOR will schedule a kick-off meeting, by phone or in person, with the contractor to discuss the tasks, the goals, and to review the schedule of benchmarks, deliverables and milestones within 10 days of award. The contractor shall furnish meeting notes to memorialize any clarifications, including quality assurance protocols, time and day of monthly conference calls, and other

logistical matters.

Task 2 Transmittals/Deliverables (per project):

2.1 Transmittal of meeting notes within 5 business days of kick-off meeting.

Task 3. Work Plan

The detailed workplan shall include a description of: 1) proposed staff; 2) number of hours and labor classification for each task, to include both prime and subcontractor labor if applicable; 3) list of deliverables, including meetings, with due dates; 4) list of secondary data to be used (reports, weblinks, contacts, specific Hazard Mitigation Plans) suitable for contractor updating as the project progresses. The contractor shall schedule a two-hour meeting with the WACOR to review the draft work plan.

All reports and other written materials shall be provided first in draft form. Upon receipt of comment from the EPA WACOR, the contractor shall revise the report and distribute final copies as stated in the PWS. Note that EPA may need to revise the dates and content for specific deliverables under Task 5 due to unanticipated issues regarding EPA program priorities. Revisions will be provided in written technical direction.

Task 3 Transmittals/Deliverables

3.1 Transmittal- Draft Work Plan within 15 business days of kick-off meeting

3.2 Deliverable- Final Work Plan within 10 days of EPA review/comment of draft work plan

Task 4. Orientation

In addition to the qualifications, the contractor shall allocate time at the beginning of this contract to become familiar with EPA provided information on the following: 1) Four recently completed EPA-FEMA pilot projects; 2) Background on the main watershed-planning-for-water-quality programs (such as 319, TMDL, nonpoint source), and the Source Water Protection Program ; 3) examples of EPA-funded green infrastructure projects with flood mitigation benefits; 4) State and Local mitigation planning as relates to stormwater and green infrastructure; 5) Funding as it relates to green infrastructure; 6) Reports on innovative solutions for drought and flooding as relates to green infrastructure. The contractor shall schedule a two-hour meeting with the WACOR to identify data gaps after initial contractor research.

Task 5. Fact Sheets

The contractor shall produce up to eight and no more than ten individual "fact sheets" on the following topics. Each shall be in a stand-alone, handout-ready format, with bulleted recommendations followed by concise text and technical graphics explaining the topic. All information shall be in a web-ready format. The contractor shall also produce a webinar-ready powerpoint on the entire suite of fact sheet subjects. Additional information by web search and telephone interviews may be needed to identify approaches used by other communities or identify potential example hazard mitigation plans. The contractor shall submit project documentation including telephone contacts and logs and technical resource documents for any additional information collection completed. In outlining each topic fact sheet, the contractor shall cite the source(s) to be used for content development or identify where additional data sources are needed. It is anticipated that simple technical graphics, such as matrix charts with symbols, shall be needed for each fact sheet. Draft fact sheets can have more text than is anticipated in the final deliverable.

Refinement and editing shall be done at the prefinal and final stage. This process will enable more ideas to be captured, some of which may later be eliminated, and reduce costs of repeated stages of editing and refinement.

The contractor shall schedule a meeting with the COR after the draft fact sheet preparation and after the prefinal draft fact sheet preparation. The contractor shall provide meeting notes after each meeting. Overview of content to start framing each fact sheet is presented in Table 1. In addition to the content in Table 1, the contractor shall prepare brief text to convey the message or caveats, and add additional information as developed during the project. Fact sheet topics are to include the following:

1. How poor stormwater management, including non-point source pollution and excess runoff, and poor watershed planning contributes to specific types of natural hazards, the stormwater management practices that can help mitigate these hazards, and the ecosystem services that the stormwater management practice or system can provide.
2. How watershed planning for water quality protection (such as CWA 319, TMDLs) is conducted, how source water protection for drinking water works, the importance of protecting naturally-occurring wetlands in watershed planning, and how these subjects relate to flood risk management. This understanding can provide for more efficient, integrated water resources planning.
3. Potential funding and financing options, and how potential funding and financing options increase with multi-objective watershed and risk management planning.
4. How stormwater management (and GSI/LID), source water protection, and watershed planning can be integrated into Hazard Mitigation Plans.
5. Relevant Community Rating System credits from FEMA and how they relate to elements of watershed planning for water quality and source water protection planning
6. Four existing examples of projects mitigating different natural hazards (flood, drought, stream erosion, harmful algal blooms, etc) with GSI/LID. The project must, have available information on cost/benefit and ideally a comparison to grey alternatives. Hybrid gray-green is acceptable.
7. Three examples of Hazard Mitigation Plans that include, at a minimum, GSI/LID policies and practices.
8. An overview of each the four EPA/FEMA pilot projects for integrating GSI/LID into Hazard Mitigation Plans, and the lessons learned from the pilots.

Additional details regarding fact sheet content is provided in Table 1 (below).

Present the Power Point presentation on a one-hour EPA webinar. The webinar format shall be Adobe Connect. The contractor shall present remotely. **[NOTE: EPA WACOR** ***may change this to creating a training module for the EPA Watershed Academy online.***]

Task 5 Transmittals/Deliverables

5.1 Transmittal-Draft Fact Sheets according to Work Plan Schedule

5.2 Transmittal-Pre-Final Fact Sheets according to Work Plan Schedule

5.3 Deliverable- Final Fact Sheets according to Work Plan Schedule

5.4 Transmittal- Draft powerpoint presentation according to Work Plan Schedule

5.5 Transmittal- Prefinal powerpoint presentation according to Work Plan Schedule

5.6 Deliverable- Final powerpoint presentation

Task 6. Additional Fact Sheets

Via written technical direction, the additional fact sheets on related topics or expanding existing topics may be included in this PWS.

WORK ASSIGNMENT EPA CONTACTS

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TRAVEL

There is no travel anticipated under this WA. However, if travel becomes necessary, it shall be in accordance with the travel clause of the contract, and shall be approved.

MEETINGS, CONFERENCES, TRAINING EVENTS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR. The total costs for all activities related to each conference, meeting, and training event described in this work assignment (WA 4-27) may exceed $20,000. An approved 5170 has been provided.

508 COMPLIANCE: All documents prepared for release to the public shall be 508 compliant.

TRANSMITTALS AND DELIVERABLES

Table 1. Overview of Content for Each Fact Sheet	
1	**Specific types of natural hazards caused by non-point source pollution, excess runoff, poor stormwater and watershed management, and the GSI/LID management practices that can help mitigate these hazards, and the ecosystem services these practices may provide.** This Fact Sheet is intended to be a persuasive presentation of information to establish that GSI/LID can help mitigate hazards, the extent to which they may provide mitigation, and that GSI can be a component of each type planning: stormwater, watershed, source water protection, and flood risk management. a) Address hazards: Wildfire, flood, landslide, drought, stream erosion, harmful algal blooms, violation of state water quality standards for pollutants including temperature, increased drinking water treatment costs, fish kills, fish and shellfish contamination, increased sediment dredging in reservoirs and river channels, urban heat island, and increased social stress (from nuisance flooding and lack of urban parks), how poor watershed planning or land use planning contributes to flood risk. b) Include in matrix table format the practices that may help mitigate each hazard: GSI/LID range of practices, including regional infiltration basins, stream restoration including pooling and meandering to enhance infiltration, stream buffers, using park green space and ball fields to store and infiltrate, daylighting storm drains, building and zoning codes, protecting naturally occurring wetlands, wetland restoration, agricultural soil health practices. Provide a graphic or table on the general effectiveness the practice where feasible (for example, many GSI/LID practices are designed to provide infiltration of the first inch or two for water quality protection, therefore, depending on the extent of practices in the watershed, may only provide flood mitigation for small nuisance flooding events, and peak flow reduction may not be observed in storms over 10 to 25-year return intervals). References should be cited for background on the practices and references should be cited for practices' role in mitigating the hazards. c) Include in a matrix table the ecosystem services that may be provided with each stormwater management practice. Preliminary work has been for EPA/FEMA that will be provided to the contractor. Ecosystem services cited in the preliminary work includes floodwater storage wildfire resistance, steep slope stability, cultural and livability services, freshwater provisioning, sediment and soil retention, and stormwater infiltration, and habitat. Cite references and value estimates (for example, from FEMA's ecosystem services default valuation) where available.

	d) Present at least two examples, where available, of one of the hazards in a locality that: 1) has a likelihood of being caused by poor stormwater or watershed management 1) resulted in human health or property risk or damage; 2) include an estimation of extent of the risk or financial loss/mitigation cost; and 3) the mitigation done and any subsequent action. e) Present the general areas in the US, for example on a State scale, for those hazards that have occurred, or where conditions are present for the hazard to occur, for those hazards that are tied to specific regions, such as harmful algal bloom outbreaks or drought. Presentation may be in the form of a US map for each hazard, or other method. Provide citation for each geographic reference. f) List up to five suggested references for additional information.
2	**How watershed planning for water quality protection (including CWA 319, nonpoint source protection, and TMDLs) is conducted, how source water protection for drinking water works, the importance of protecting naturally-occurring wetlands in watershed planning and how they relate to flood risk management to provide more efficient, integrated water resources planning.** This fact sheet is intended to demystify the different planning processes for those who are not familiar with them all, and show how they can be more efficiently completed if they done together. a) Provide a brief overview of the purpose of each planning type, what entity generally does the plan and therefore may have relevant information to share, and under what circumstances a community might initiate a plan. b) Prepare a matrix table of the steps in watershed planning for water quality protection, Source Water Protection planning, and flood risk management planning indicating which steps are, in general, common between the planning types. c) Prepare a matrix table of differences in the preparation of each plan type. d) Prepare a brief description of each of steps in the matrix table, linked to the matrix table in footnote format. e) Provide short case descriptions of two examples of communities that combined at least two of the plan types in their Hazard Mitigation Plan or other comprehensive watershed plan.

	f) List up to five suggested references for additional information.
3	**Potential funding and financing options.** This fact sheet is intended to show that more funding and financing options become available when instream water quality, drinking water source protection, wetlands protection, and other ecosystem services are project objectives, compared to flood damage reduction alone. a) Prepare a matrix(s) of major funding options for each plan type for planning, implementation or construction, and maintenance. Include federal, state, local, nonprofit, and public private partnerships. b) Provide brief descriptions references for additional information for each funding type, linked to the main table in a footnote format. c) List up to five suggested references for additional information.
4	**How GSI/LID for stormwater management, source water protection, and watershed planning can be integrated into Hazard Mitigation Plans.** This fact sheet is intended to demonstrate: • to mitigation planners that GSI/LID, source water protection, and watershed planning for water quality fit appropriately in a Hazard Mitigation Plan framework; and • to stormwater, source water protection, and watershed professionals where their program elements can fit in a Hazard Mitigation Plan. a) Prepare table of typical activities in each of these sections of a local Hazard Mitigation Plan (44 CFR 201.6): Planning, Plan Content, Mitigation Strategy, and Plan Maintenance Process. Indicate which elements of stormwater planning, watershed planning, and source water protection planning could fit in each section. b) Provide brief descriptions for the elements of stormwater planning, watershed planning, and source water protection planning linked to the table in footnote format. c) List up to five suggested references for additional information.

5	**Relevant Community Rating System (CRS) credits from FEMA and where those creditable practices may already exist in, or benefit, watershed or source water protection planning efforts.** This fact sheet is intended to demonstrate that achieving CRS credits for GSI/LID and other water resource protection practices may also help with (do double-duty) implementing other local water programs, and that if these other programs already have these elements in place, that may give you a head start on CRS credit. a) Provide a matrix table of the relevant CRS credits (by name) (including but not limited to "green") for activities that may also be present in the other plans, and indicate which activities are also likely to present or beneficial in stormwater planning, watershed planning, or source water protection planning. b) Provide a table of the CRS credits cited in the above table by number and name, short description, and maximum credits available. c) Provide a table for each of the major activities of stormwater planning, watershed planning, and source water protection planning. In each table, provide a brief description of the element used in the table in 5(a). d) List up to five suggested references for additional information.
6	**Four existing examples of projects mitigating different natural hazards (flood, drought, stream erosion, harmful algal blooms, etc) with GSI/LID solutions that have available information on cost/benefit and, ideally, a comparison to grey alternatives.** This Fact Sheet is intended to provide supporting information that GSI stormwater planning and source water protection and 319 watershed planning can, in appropriate conditions, be a cost-effective or otherwise desirable component of hazard mitigation.

7	**Three examples of local or Regional Hazard Mitigation Plans that include at GSI/LID policies and practices, at a minimum.** This Fact Sheet is to highlight those municipalities or regional planning agencies that have taken the lead in this area, and to provide some examples that other communities may want to consider. a) For each HMP, at a minimum include how the local government came to include these elements, obstacles they encountered and how they overcame them, any benefits they expect to see from these approaches compared to solely conventional solutions, and excerpts from the text where appropriate with context added by contractor. b) Provide an overview of each the four EPA/FEMA pilot projects for integrating GSI into Hazard Mitigation Plans, and the lessons learned from the pilots
8	**An overview of each the four EPA/FEMA pilot projects for integrating GSI/LID into Hazard Mitigation Plans, and the lessons learned from the pilots.** This Fact Sheet is intended to present the approaches and lessons learned from four pilot efforts to help professionals start the process in their communities.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-28

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Farmington Bay Assessment

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/24/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Tina Laidlaw (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 406-457-5016	
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-564-3133	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2002	
	FAX Number:	

PERFORMANCE WORK STATEMENT
EPC14016 WORK ASSIGNMENT 4-28
Farmington Bay Assessment

WACOR: Tina Laidlaw (406-457-5016)
Laidlaw.tina@epa.gov

PERFORMANCE PERIOD: Date of Issuance through June 30, 2019

Background

In 2016, EPA funded TetraTech to complete a preliminary assessment of Farmington Bay of the Great Salt Lake. The original scope of work and background information on the Great Salt Lake is included in **Appendix A.** During the timeframe that EPA was reviewing TetraTech's draft Farmington Bay assessment, the Agency learned from UDEQ that additional data for Farmington Bay were available.

This scope of work focuses on finalizing the preliminary assessment by addressing EPA's comments and incorporating the additional data and information.

Tasks

1. Task 1 - Quality Assurance Project Plan (QAPP) Development
All tasks where the Scope of Work includes collection of or use of environmental data, design or construction of technologies, develops or uses models, or may require quality assurance or control shall require a Quality Assurance Project Plan (QAPP). Following the notice to proceed, the Contractor shall prepare a project-specific QAPP following G5 and R5 (http://www.epa.gov/quality/qs-docs/g5-final.pdf, http://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans). The QAPP shall build from the Farmington Bay Assessment QAPP developed and approved under the previous contract (EPA Contract Number EP-R8-12-04, Task Order 22). The new QAPP shall include all required elements, copy appropriate sections from the 2017 QAPP, and describe any new information that will be evaluated as part of this Work Assignment.

The Contractor shall submit the completed Region 8 QA Crosswalk with the QAPP. The form may be found at EPA Region 8's QA website: http://www.epa.gov/region8/qa/reference.html.

Deliverables:

1. A QAPP for use of secondary literature data will be developed.

2. Task 2 - EPA and the contractor shall hold a kick-off conference call to discuss EPA's comments on the draft assessment and identify additional datasets that shall be analyzed and presented in the final assessment.

In EPA's review of the draft Farmington Bay assessment, the Agency modified the flow of the document and identified specific items for the Contractor to address. See Appendix B of this document for the list of specific items. Following the modified format, the Contractor shall update the document to respond to EPA's comments and provide additional information.

EPA will contact UDEQ and ask them to provide any new data collected for Farmington Bay since 2015.

3. Task 3 -**The contractor shall review and analyze the new data provided by UDEQ.** EPA will hold a call with the contractor to identify how best to incorporate the new in the assessment. For example, the Contractor and EPA shall discuss whether to create new graphs and figures or if they shall update the existing box plots. Results from these analyses shall be incorporated into the draft assessment and used to update the conclusions. EPA will collaborate with the Contractor to develop final language describing the results.

4. Task 4 - EPA will distribute the draft assessment for internal EPA review. Pending feedback from UDEQ, the State may be engaged in the review. Based on comments received during that review, the WACOR will work with the Contractor to identify next steps.

Deliverables:

1. Kick off Conference Call: Within 15 days of the start of the WA.
2. Revise and resubmit QAPP and QARF to HQs QA group: Within 15 days of the start of the WA.
3. Preliminary Analysis of New Data (either documented in a memo or PowerPoint): 6 weeks after receipt of work assignment.
4. Draft assessment report: 8 weeks after receipt of work assignment.
5. Final assessment report: 12 weeks after receipt of work assignment.

APPENDIX A – Below is an overview of previous work that was done on this assignment to use as resourceful information. This is an attachment of the old work that has been completed. The new work shall build from the previous work mentioned below.

Statement of Work – Old Work Assignment
01/06/2017

Contract:	TMDL Support Services
Contract Number:	EP-R8-12-04
Contractor:	Tetra Tech, Inc.
Task Order Number:	22
Scope	Farmington Bay Assessment
EPA Contracting Officer:	Scott Girouard (303-312-6527) Girouard.scott@epa.gov
EPA COR and Technical Lead:	Tina Laidlaw (406-457-5016) Laidlaw.tina@epa.gov
Period of Performance:	Award to October 15, 2017

WORK ASSIGNMENT BACKGROUND:

The Great Salt Lake (GSL) is a unique, environmentally significant resource that requires special efforts for proper assessment and protection. UDWQ has partitioned the GSL into five subclasses (Gilbert Bay: Gunnison Bay; Bear River Bay; Farmington Bay; Transitional waters along the shoreline) to reflect the varying salinity gradients observed throughout the lake. Figure 1 shows the different subclasses.

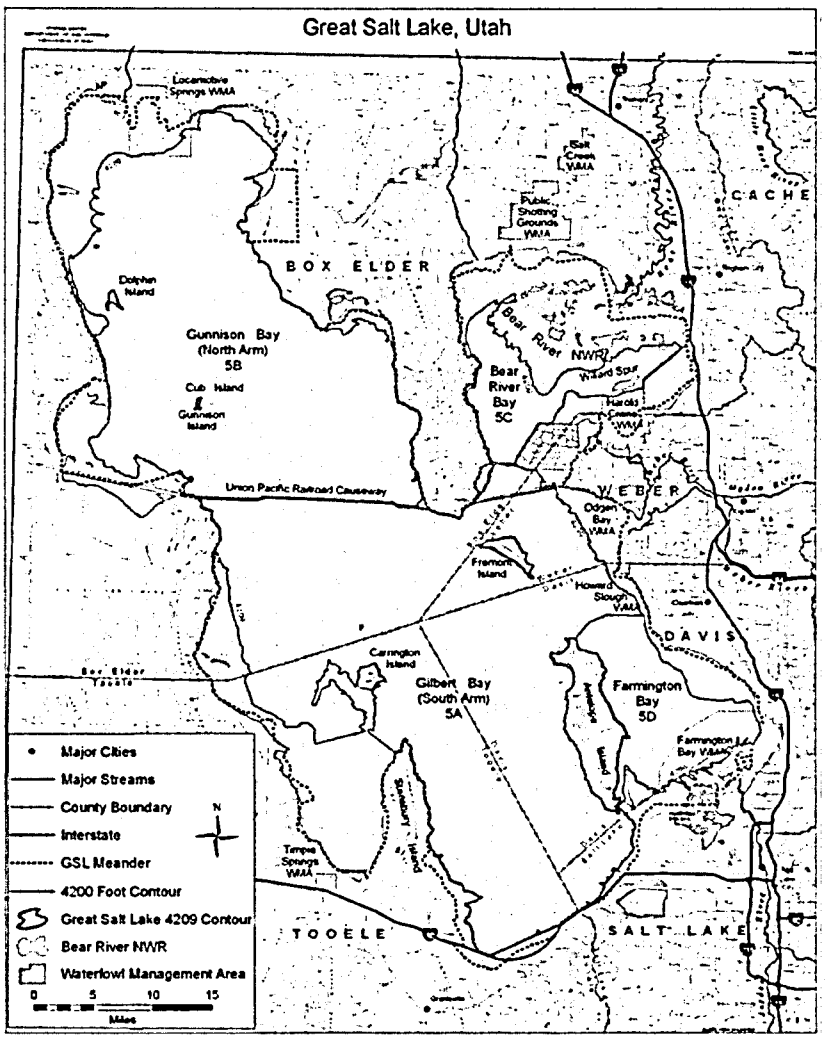

FIGURE 1. GREAT SALT LAKE, UTAH

Currently, the only numeric criterion applicable to the GSL is a selenium standard. A narrative standard otherwise applies but has been difficult for the state to interpret given the unique characteristics of the Lake (e.g., hypersaline conditions; very shallow). The narrative standard that currently applies to the Great Salt Lake is provided below:

7.2 Narrative Standards

It shall be unlawful, and a violation of these regulations, for any person to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste; or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures.

Farmington Bay (an arm of the Great Salt Lake) receives wastewater effluent from dischargers surrounding Salt Lake City (see Figure 2 below for details). Stakeholders have repeatedly raised concerns about eutrophication effects in Farmington Bay and concerns with extensive cyanobacteria blooms. Given stakeholder concerns and review of existing data, in 2012, EPA partially approved Utah's 2008/2010 303(d) list and deferred action on UDEQ's decision not to assess data from the Great Salt Lake (GSL) and instead place GSL into category 3 in their Integrated Report (category 3 = insufficient information for an assessment determination). That deferral is still in effect.

EPA has been working with the state to complete an assessment for Farmington Bay since 2006. In 2015, Utah Division of Water Quality (UDWQ) developed a recreational use assessment method to identify waters impaired for harmful algal blooms (HABs). Following the methodology, a lake/reservoir is considered impaired if the cyanobacteria cells counts exceed 100,000 cell/ mL for more than one sampling event. This threshold was developed by the World Health Organization (WHO) as a value that indicates impacts to recreational uses.

In preparation for the 2016 Integrated Report, UDWQ applied the recreational use methodology to review the available data from Farmington Bay. In addition to cyanobacteria cell counts, the state used nodularin (a toxin produced by cyanobacteria) and chlorophyll-a concentrations as additional indicators they are considering to verify the assessment. UDWQ selected a microcystin threshold of > 20 µg/L as a surrogate for a nodularin threshold and chlorophyll-a threshold of 50 µg/L based on WHO recreational use recommendations. As a result, in March 2015, the state proposed to list Utah Lake and Farmington Bay as impaired for recreational use support based on harmful algal blooms.

In May 2015, stakeholders reminded UDWQ that the state's assessment method indicated they would not assess the Great Salt Lake (and therefore, Farmington Bay). In response, the state modified their assessment outcome to indicate that no listing decisions would be made for the Great Salt Lake. The final IR includes a summary of the existing and readily available harmful algal bloom data for Farmington Bay but fails to list the waterbody as impaired (Table 2). The final IR (page 15) concludes:

"Data from Farmington Bay show frequent and extensive HABs. Phytoplankton samples in Farmington Bay exceeded 100,000 cyanobacteria cells/ mL in over 50% of samples. In addition, the cyanotoxin and chloropyll are indicators also frequently exceeded thresholds for human health risk. Farmington Bay will remain category 3C – assessment methods in development for the 2016 IR. UDWQ intends to assess recreational uses for Farmington Bay in the 2018 Integrated Report. Frequent exceedance of the indicators identify a potential human health risk for recreational users of Farmington Bay."

Table 2.

Parameter	Cyanobacteria	Nodularin	Chlorophyll *a*
Threshold	100,000 cells/mL	20 µg/L	50 µg/L
Number of samples	68	105	159
Exceedances	36	27	94
Percent exceedance	53	26	59

The purpose of this scope of work is to review the recreational use assessment of Farmington Bay completed by UDWQ, strengthen the state's assessment, and complete a final assessment that can be used (and defended) by EPA for 303(d) listing purposes.

Task 1 - Quality Assurance Project Plan (QAPP) Development

All tasks where the Scope of Work includes collection of or use of environmental data, design or construction of technologies, develops or uses models, or may require quality assurance or control will require a Quality Assurance Project Plan (QAPP). Following the notice to proceed, the Contractor shall prepare a project-specific QAPP following G5 and R5 (http://www.epa.gov/quality/qs-docs/g5-final.pdf, http://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans).

The Contractor shall submit the completed Region 8 QA Crosswalk with the QAPP. The form may be found at EPA Region 8's QA website: http://www.epa.gov/region8/qa/reference.html.

The QAPP must be approved prior to the initiation of this Task Order. The Contractor shall review and update the QAPP annually and/or as required by changes in the Task Order SOW using the Region 8 QA Crosswalk.

Deliverables:

1. A QAPP for use of primary and secondary literature data will be developed.

Task 2: Scoping Conference Call

The Contractor shall schedule a scoping meeting with the EPA COR, Contracting Officer (CO) and Project Officer (PO) within twelve (12) business days following receipt of this Statement of Work (SOW) to discuss the overall objective of the SOW and specific task elements.
The contractor shall provide a proposed work plan electronically to the CO and PO within fifteen (15) business days following receipt of this SOW.

Deliverables:

1. Meeting minutes from the scoping conference call.
2. Proposed technical work plan and cost estimate.

Task 3: Progress Reports

The contractor shall prepare Monthly Progress Reports containing a description of the work performed that month, specific difficulties encountered, hours expended and percentage of each task completed with accompanying invoices based on work performed; electronic copies, with bookmarks, to the CO and PO.
The contractor shall prepare a close-out report within 60 days of completion of all tasks associated with this SOW.

Deliverables:

1. Monthly progress reports for the life of the project.
2. Close-out report upon project completion.

Task 4: Review of the State's Assessment Methodology

The contractor will review the Chapter 6 of Utah's Integrated Report: Evaluation of Harmful Algal Bloom Data in Farmington Bay, Great Salt Lake, the state's response to stakeholder comments on the IR, and Appendix A. The review will identify areas that can be strengthened and/or revised to complete an assessment for Farmington Bay. For example, the contractor will examine the state's use of a microcystin threshold for comparison to nodularin concentrations. Results of the literature review completed in TO17 will guide this examination and inform whether the toxicity and liver pathology induced by nodularin is similar to that caused by microcystins. Based on this information, we will determine whether it is appropriate to apply a microcystin threshold to nodularin data. Additionally, the contractor will evaluate whether other thresholds and/or indicators should be considered.

The contractor will draft a list of issues related to improving the Farmington Bay assessment and submit this information to EPA. EPA will provide direction to the contractor on which of the issues should be pursued in order to complete a final assessment.

Deliverables:

1. Memo summarizing the list of strengths/weaknesses of Utah DWQ's assessment of Farmington Bay along with suggestions on how to address those weaknesses.
2. Memo containing a final list of recommended next steps on completing the assessment.

Task 5: Address Recommendations to Strengthen the Assessment

The contractor will work to address the prioritized list of weaknesses in the assessment. Specifically, the contractor will use a multiple lines of evidence approach to incorporate multiple thresholds that may relate to protection of recreational uses in a saline environment. Other indicators may be considered if sufficient data are readily available. The contractor will also attempt to obtain additional documentation of recreational use activities on Farmington Bay.

Deliverables:

1. Draft memo documenting work completed to address the final list of recommended next steps.

Task 6: Final Assessment Completed

The contractor will build from the existing state assessment and complete a final assessment for Farmington Bay. This final assessment should strengthen the state's assessment by incorporating the recommendations needed to address the weaknesses and ensure the assessment includes a robust set of thresholds and indicators. A draft assessment will be provided to EPA for review and comment.

Deliverables:

1. Draft assessment completed and submitted to EPA for review and comment.
2. Final assessment incorporating comments and edits from EPA.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-29

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Support for 11th National Wate

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Work shall not begin until July 1, 2018.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Chris Faulkner (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-566-1185	
	FAX Number:	
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-564-3133	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2002	
	FAX Number:	

STATEMENT OF WORK

EP-C-14-016

WA: 4-29

A. TITLE: Support for 11th National Water Quality Monitoring Conference

B. KEY EPA PERSONNEL:

Work Assignment Contracting Officer Representative:

Name: **Chris Faulkner**
Office: Office of Water/Office of Wetlands, Oceans & Watersheds/ Watershed Restoration, Assessment, and Protection Division
Address: 1200 Pennsylvania Avenue NW (4503T), Washington, DC 20460
Telephone: 202-566-1185
E-mail: Faulkner.chris@epa.gov

Alternate Work Assignment Contracting Officer Representative:

Name: **Lareina Guenzel**
Office: Office of Water/Office of Wetlands, Oceans & Watersheds/ Watershed Restoration, Assessment, and Protection Division
Address: 1200 Pennsylvania Avenue NW (4503T), Washington, DC 20460
Telephone: 202-566-0455
E-mail: Guenzel.Lareina@epa.gov

C. PERIOD OF PERFORMANCE: July 1, 2018 through June 30, 2019

D. TASKS

BACKGROUND

The main goals of the National Water Quality Monitoring Council (NWQMC), co-chaired by the U.S. Environmental Protection Agency (EPA), include integrating diverse monitoring efforts, using existing resources more effectively, and obtaining consistent national monitoring resulting in comparable data and more consistent reporting. The activities of the NWQMC work toward improvements in water quality standards and trends assessment, assessment of human health and ecological risks due to environmental stressors, and water quality program design and evaluation. Among its many activities, the NWQMC sponsors a biennial National Water Monitoring Conference that includes a varied agenda on topics such as assessing the attainment of water quality standards, addressing emerging contaminants and threats to human health and aquatic ecosystems, building and improving monitoring, assessment and analytical partnerships, and managing and sharing monitoring data. This work assignment provides technical support for the National Water Quality Monitoring Council and its workgroups in convening the 11th National Water Monitoring Conference that will be in Denver, CO March 18-22, 2019.

The contractor shall support to the NWQMC and its Conference Planning Committee (CPC), made up of approximately 12 representatives from federal, state, and local agencies, and the North American Lake Management Society. This CPC is responsible for the primary activities of planning, organizing and implementing the Conference. Contractor support is needed to facilitate many of the tasks of the CPC. The CPC is chaired by EPA.

We are seeking support for the planning, organization, and logistics for the 11th National Monitoring Conference.

Task 1: *Provide communications, outreach, organizational and logistics support to the NWQMC Conference Planning Committee (CPC) for the 11th National Water Monitoring Conference, including communicating with accepted speakers and tracking their needs, tracking speakers that have declined, supporting the CPC in organizing concurrent sessions and developing the conference agenda.*

1a. The CPC will review and select abstracts for oral presentations (including alternates), extended sessions, and posters. The contractor shall attend an abstract selection meeting and/or conference calls where abstracts are discussed and organized into sessions, and shall assist the CPC in facilitating this meeting or conference call. The contractor shall work from a spreadsheet developed by the CPC based on session organization planning to track status of sessions/presentations/presenters.

1b. After the abstract selection, the contractor shall contact rejected and alternate presenters and those changed from oral to poster presentations and from poster to oral; contact accepted speakers (including extended session speakers and organizers) and confirm whether they accept/decline invitations to present and have registered for the conference; and track the status of acceptance replies. The contractor shall assist the Work Assignment Contracting Officer's Representative (WACOR) and CPC in identifying and contacting alternates/replacements for speakers who cancel their attendance.

1c. The contractor shall assist the CPC in the placement, into a draft conference agenda, of approximately 120-200 abstracts, including replacement presentations; 10-12 extended sessions such as workshops and panels (90 minutes to three hours each); and approximately 80 poster presentations. The contractor shall provide accepted presenters with information about their sessions (such as moderator's name, session title and date/time) and distribute guidelines for speakers, poster presenters, and moderators to support the development of concurrent sessions and poster sessions. *Guidelines and templates developed for past conferences are available and will be updated and re-used for this purpose.*

The contractor shall track any changes to original abstracts submitted by presenters and ensure that final abstracts are complete for inclusion in the conference program. The contractor shall respond to questions from presenters and moderators, track presenter and moderator scheduling requests, and communicate with session moderators/organizers to confirm session needs.

The contractor shall organize sessions into a draft and final conference agenda. *NOTE: the contractor is not responsible for the development and/or printing of the conference program.*

The contractor shall serve as key phone/email contact for any presenters or moderators who have questions about their participation in the conference.

Deliverable	Due Date
Attend and facilitate abstract selection meeting, and work with the CPC to develop spreadsheet to track results of session development	Abstract selection meeting
Contact abstract authors regarding confirmation of participation, acceptance/rejection, conversion of oral to poster or poster to oral	Within one month of abstract selection meeting
Provide CPC agenda development support; track presenter scheduling requests, participation confirmations, and abstract corrections; serve as key contact with accepted speakers and poster presenters; invite alternates as needed	Ongoing
Update and send guidelines to speakers and moderators	Within one-two months of abstract selection meeting
Confirm that speakers are registered; send out reminders; prepare field trip instructions and on-site conference material	Ongoing
Develop draft agenda for CPC review	Six weeks before conference
Prepare final conference agenda	Three weeks before conference

Task 2 Provide on-site conference logistics support for the 11th National Water Monitoring Conference and collect presentations for Conference Proceedings suitable for web posting.

2a. The contractor shall provide one staff member to attend the 11th National Water Monitoring Conference and assist with on-site conference logistics and outreach. The contractor shall work with presenters, field trip leaders, moderators, and key note/plenary speakers to ensure their availability and readiness to participate and perform during the conference, including receiving final abstracts for conference proceedings and ensuring feedback through conference evaluation forms. (Note: The CPC will distribute a conference evaluation form to meeting participants that will include requested feedback on the quality of the contractor's organizational and logistical support.)

The contractor shall provide logistical support to include preparing computers/projectors for presentations, ensuring effective technical support for computers/projectors as needed throughout the conference, assisting with preparation of field trip leaders and participants, and saving presentations for later development of conference proceedings.

2b. The contractor shall collect and assemble final Power Point presentations from speakers, including signed permission to post the presentations on the conference website. The contractor shall develop PDF files of the presentations and shall submit those electronically to the EPA WACOR as Conference Proceedings.

2c. The contractor shall develop a brief wrap-up report summarizing the contractor's key actions in support of the conference. The report should include dates tasks were accomplished and difficulties encountered, as well as any recommendations for improvement for future conferences.

Deliverable	Due Date
Attend 11th National Water Monitoring Conference and provide on-site logistical support to CPC	Conference dates: March 18-22 2019
Secure permissions to post presentations from conference speakers	Two weeks after conference
Assemble PPT presentations and develop PDF files for submission to EPA WACOR	Six weeks after conference
Submit final wrap up report on contractor activities.	Eight weeks after conference

TRAVEL

Travel may be necessary under Task 1 of this WA, for the contractor to attend the *11th National Water Monitoring Conference.* Assume, 1 contractor may be requested to attend in Washington, D.C.

MEETINGS, CONFERENCES, TRAINING EVENTS

All appropriate clearances and approvals required by Agency policy in support of any and all conference related activities and expenses, including support of meetings, conferences, training events, award ceremonies and receptions, including the form 5170 for all meetings costing more than $20,000, shall be obtained by the EPA CL COR as needed and provided to the Contracting Officer. Work under conference-related activities and expenses shall not occur until this approval is obtained and provided by the EPA CL COR. The total costs for all activities related to each conference, meeting, and training event described in this work assignment (WA 4-29) may exceed $20,000. An approved 5170 has been provided.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-30

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Modeling Webinars

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 08/03/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Jason Gildea (Signature) (Date)	Branch/Mail Code: Phone Number: 406-457-5028 FAX Number:
Project Officer Name: Tanyan Bailey (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Courtney Stallworth (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2002 FAX Number:

Performance Work Statement

Contract:	EP-C-14-016
Work Assignment #:	4-30
Contractor:	Tetra Tech, Inc.
Amendment Number:	Initial
Scope:	Water Quality Modeling Webinars
EPA Contracting Officer:	Tanyan Bailey (202-564-3133) Bailey.Tanyan@epa.gov
EPA Work Assignment Contracting Officer Representative (WACOR):	Jason Gildea (406-457-5028) Gildea.Jason@epa.gov
EPA Alternate Work Assignment Contracting Officer Representative (WACOR):	Ashley Allen (202-566-1012) Allen.Ashley@epa.gov
Period of Performance:	Date of Issuance to June 30, 2019

A. WORK ASSIGNMENT DESCRIPTION

The Clean Water Act (CWA) Section 303(d) Program is planning to host a webinar-based training series with the primary purpose of building technical water quality and watershed modeling capacity across States and Environmental Protection Agency (EPA) Regions. This series will build on the existing 15 webinars that have been completed over the past 4 years (available here: https://www.epa.gov/waterdata/surface-water-quality-modeling-training). The contractor shall help to implement these webinars by (1) preparing technical materials (2) presenting modeling webinars (3) identifying and securing technical experts for the webinars (3) providing communications support for the webinars (e.g., webinar logistics, recording, archive, etc.). The contractor shall use EPA supported webinar software for this series (Adobe Connect or Skype for Business).

B. TASKS

Task 1 – Quality Assurance

Quality Assurance (QA) is an important component of EPA's work to assure that minimum quality standards are attained. The Contractor shall follow the Quality Management Plan (QMP) for this contract. In addition, the contractor shall document the processes for quality assurance that it shall follow for the tasks under this Work Assignment (WA) in a brief Quality Statement (QS). The QS shall include any Standard Operating Procedures that are relevant to the tasks in the WA.

Task 2 – "Kick Off" Meeting and Webinar Planning Meetings

Prior to beginning work on this WA, the contractor shall schedule a meeting with the WACOR and

Alternate WACOR to discuss quality assurance documents and to discuss the project schedule, topics, and dates. The contractor shall continue to have periodic meetings throughout the duration of this work assignment with the WACOR to define webinar content and scheduling.

Task 3 – Webinar Series Preparation

3.1 – Communication Materials and Evaluation

The Contractor shall develop communication materials for advertising each webinar session. Communication materials include a one-page flyer with basic information about the session, speakers and logistics on how to participate.

The draft communication material shall be provided electronically in MSWord and PDF format to the WACOR for review and approval. The WACOR will provide the Contractor with any edits within 10 working days of receipt of the draft. The contractor shall finalize the document within 10 working days of receipt of TOPO comments. Contractor shall plan for development of these such that it can be released at least one month prior to scheduled session(s).

The Contractor shall develop an evaluation form to be sent to participants after each webinar session. The evaluation form can be distributed using an electronic method (e.g., Survey Monkey). The evaluation shall be simple (no more than 6 questions) that helps EPA evaluate quality of the webinar (content and how it was run) and allows participants to provide feedback in key areas to allow for improvement in the next webinar (e.g., timeliness, responsiveness to questions).

The draft evaluation shall be provided electronically to the WACOR for review and approval. The WACOR will provide the Contractor with any edits within 10 working days of receipt of the draft. The contractor shall finalize the evaluation within 10 working days of receipt of TOPO comments.

3.2 – Expert Presenters and Technical Content

After consultation with the WACOR, the Contractor shall secure water quality modeling experts to create and present technical information and case studies that illuminate challenges in developing and applying models for TMDLs. The presentations shall be in a two-hour webinar format. Water quality modeling experts may include contracting staff. Alternatively, the contractor shall identify and secure presenters that are from States, Indian Tribes, environmental organizations, academia, industry, EPA HQ and Regional Offices, other Federal agencies, and other contractors.

The Contractor shall provide the names, organizational affiliation, phone and fax numbers and the presentation topics to the WACOR for review and approval prior to finalizing participation commitments. Once identified, the Contractor shall contact each speaker to ascertain presentation needs. The WACOR will provide the contact information to the contractor to ascertain the presentation needs.

It is expected that there will be one to two expert speakers per webinar, and some expert speakers may be asked to do more than one webinar. The Contractor shall work with the WACOR to finalize the selection of speakers and topics.

3.3 – Registration

The Contractor shall accept and record registration information from webinar attendees prior to the webinar. The contractor shall offer options for technology to be used for the webinar and to conduct registration. At a minimum, the Contractor shall record names, organizational affiliations, and e-mail address of those who register for the webinar. Once registration opens, the Contractor shall provide on a biweekly basis the list of names to the EPA TOPO. Registration shall remain open until webinar start or when spaces fill (if capacity limited).

Task 4 – Webinar Series Support

4.1 – Webinar Dry Run

The Contractor shall assist in setting up and conducting a dry run prior to each the webinar sessions. The primary purpose of the dry run is to make sure the equipment works for each speaker and that they know how to manage their role within the webinar platform. This is particularly important and many of the presenters will be at alternate locations.

The contractor shall schedule webinar dry run sessions with speakers one week prior to the webinar date. During the dry run, the contractor shall provide clear instructions to the speakers on what they will need to do to get their presentation or demo up and running.

4.2 – Webinars

The contractor shall help with webinar-based training sessions, with each session running approximately two hours in duration. The webinar platform shall be able to accommodate up to 1,000 attendees. The Contractor shall provide logistical and technical support for webinars, the streaming audio for the webinars and archiving as detailed below. The contractor shall assist with the delivery of each webinar as detailed by the WACOR. It is anticipated that up to 15 webinars shall be produced. Technical assistance includes, but is not limited to: troubleshooting issues that speakers or participants may be experiencing as they connect to the webinar; and conducting a sound check prior to start time to make sure that speakers can be clearly heard.

The contractor shall provide the following logistical support for webinars including the following:

- Coordinating webinar presentation with presenters including letting them know the deadlines for submitting webinar presentations and other related materials
- Preparing a list of "additional resources" for each webinar related to each webinar topic.
- Preparing an evaluation form (may be electronic) to use at the end of each webinar.
- Assisting with formatting and editing of webinar presentations (e.g., adding introductory slides, compressing slides, and fixing other formatting problems).
- Providing a final PowerPoint file and PDF copy of the webinar presentation.
- Answering all questions related to technical support for webinar participants and presenters.
- Preparing a draft "script" for moderators to use during the webinar to introduce and close the webinars and for the Q&A sessions and polling questions and serving as moderator, as needed.
- Assisting with follow-up activities after the webinar such as summarizing number of webinar attendees and reviewing the closed captioning/archives for the webinars.

4.3 – Facilitation

The Contractor shall help facilitate each session of the webinar series. The facilitator shall be primarily responsible for making sure that the webinar runs on time, that the Q & A portion of the webinar is well organized, and that the public remains engaged. The facilitator shall have experience in this role using the webinar format.

Task 5 – Post Webinar Support

5.1 – Attendance

Based on actual attendance, the Contractor shall develop an alphabetical final attendance list and send it to the EPA TOPO electronically within two days following each webinar.

5.2 – Feedback

The contractor shall send out Thank You email to all participants that includes an evaluation (can be an electronic form). The Contractor shall compile the comments received through the evaluation and deliver them to the EPA TOPO electronically within two weeks of each webinar.

5.3 – Webinar Archive

The Contractor shall archive the webinars and save them in a format that is Section 508 compliant, including closed captioning done during each webinar that EPA can use for posting on EPA's Website.

Task 6 – Final Report

The Contractor shall provide a brief final report on the status of all benchmarks, deliverables and milestones at the conclusion of the effort. The final report shall identify any QA issues.

C. SCHEDULE OF BENCHMARKS & DELIVERABLES:

Task #	BENCHMARK, DELIVERABLE or MILESTONE	SCHEDULE
1.0	Quality statement	Within ten (20) days of WA award.
2.0	Kick-off meeting	Within ten (10) days of WA award.
3.0	Webinar Series Preparation	Award to June 30, 2019
4.0	Webinar Series Support	Award to June 30, 2019
5.0	Post Webinar Support	Award to June 30, 2019
6.0	Final Report	Award to June 30, 2019

D. REPORTING

The Contractor shall participate in status phone calls with the WACOR on an as-needed basis. The WACOR shall provide the Contractor with a one-week notice of any scheduled status calls. All documentation and reporting under this WA shall be in compliance with contract requirements. See contract clause F.2, F.3, and J.2 "List of Attachments, Number 2 - Reports of Work".

The Contractor shall prepare and furnish each month to the WACOR a written summary of work performed, and progress towards the schedule of benchmarks, deliverables and milestones which has been accomplished each month. The Contractor shall also include in this item a brief written summary of any challenges encountered in the appropriate month.

In addition, the Contractor shall identify and briefly describe in the written monthly report those QA / QC activities which were performed to support implementation of this WA, and furnish a brief written description of: problems encountered, and any deviations were occurred from: the QMP, any QAS, any SOP's, checklists, or other QA guidance, as well as a description of the corrective actions taken.

E. CONTRACTOR IDENTIFICATION

Contractor personnel shall always identify themselves as Contractor employees by name and organization and physically display that information through an identification badge. Contractor personnel are prohibited from acting as the Agency's official representative.

The Contractor shall refer any questions relating to the interpretation of EPA policy, guidance, or regulation to the WACOR.

F. CONFERENCE/MEETING GUIDELINES AND LIMITATIONS

The Contractor shall immediately notify the EPA Contracting Officer and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur $20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the Contracting Officer.

G. VALIDATION OF WA DELIVERABLES FOR SECTION 508 COMPLIANCE

The Contractor shall support the WACOR in conducting a "Final Deliverable Validation" to ensure compliance with Section 508 and the Federal Acquisition Regulations (FAR) related to "electronic and information technology (EIT) deliverables." The Contractor shall furnish certification, in writing, to the TOPO that the Contractor has complied with EPAAR Clause 1552.211-79 "Compliance with EPA Policies for Information Resources Management" (Reference Contract Clause C-1), including the requirement that all electronic and information technology (EIT) deliverables be Section 508 compliant in accordance with the policies referenced at http://www.epa.gov/accessibility/. (Reference Contract Clause – 1 (c) and Attachment 1, PWS, Section 2.5.3.4, 3.7, and 4.3.7).

H. QUALITY ASSURANCE SURVEILLANCE PLAN

Per contract requirements.

I. NOTIFICATION OF COMPLETION OF WA DELIVERABLES

In the event the WA reaches thirty (30) days prior to the end of the Period of Performance in a given period, and the Contractor assesses that the Contractor will not be able to satisfactorily complete any of the benchmarks, milestones, or deliverables by the end of the Performance Period, the Contractor shall notify the TOPO and the Contracting Officer (CO) immediately, in writing. Within five (5) business days of said notification, the TOPO, in coordination with the CO, will provide technical direction concerning use of the remaining funding to prepare and furnish to the TOPO: draft deliverables, interim work products, and any necessary working files in an electronic format which is supported by EPA.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 4-31

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-016	08/05/2014 To 06/30/2019 Base Option Period Number 4	Support for Wyoming's 303d Pro

Contractor: TETRA TECH, INC.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 08/20/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 08/05/2014 To 06/30/2019		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Jason Gildea	(Signature)	(Date)	Branch/Mail Code: Phone Number: 406-457-5028 FAX Number:
Project Officer Name: Tanyan Bailey	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-3133 FAX Number:
Other Agency Official Name	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Courtney Stallworth	(Signature)	(Date)	Branch/Mail Code: Phone Number: 513-487-2002 FAX Number:

Performance Work Statement

Contract:	EP-C-14-016
Work Assignment #:	4-31
Contractor:	Tetra Tech, Inc.
Amendment Number:	Initial
Scope:	Wyoming Listing Support
EPA Contracting Officer:	Tanyan Bailey (202-564-3133) Bailey.Tanyan@epa.gov
EPA Work Assignment Contracting Officer Representative (WACOR):	Jason Gildea (406-457-5028) Gildea.Jason@epa.gov
EPA Alternate Work Assignment Contracting Officer Representative (AWACOR):	Peter Brumm (406-457-5028) Brumm.Peter@epa.gov
Period of Performance:	Award to June 30, 2019

A. PROBLEM STATEMENT AND WORK ASSIGNMENT (WA) DESCRIPTION

Wyoming's 2018 Integrated 305(b) and 303(d) Report (IR) is a 223-page Microsoft Word document that includes Word tables representing the 305(b) and 303(d) lists. Wyoming's IR can be difficult to use for several reasons. The supporting assessment records are currently in a variety of different formats and stored in numerous different locations. In the IR, electronic linkages to the supporting assessment records are currently inconsistent and have proven difficult for the public to access. The current Geographic Information System (GIS) is limited to spatial representations of the assessed streams with very limited attribution. A user-friendly interactive map is not available for the public. Data for the 305(b) and 303(d) lists are currently only available within the Environmental Protection Agency's (EPA) Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS); WDEQ does not currently have a database for this type of data storage or analysis. ATTAINS provides limited data analysis and retrieval capabilities below the scale of an assessment unit (e.g., it is not possible to sort the 303(d) list for an individual cause of impairment such as nutrients or sediment). Also, in the absence of a WDEQ database and/or fully attributed GIS it is a challenge to retrieve and/or analyze our assessment results for either planning purposes or in response to questions from the public, other governmental agencies, or other operating units within WDEQ

The goal of this scope of work is to address these issues and create a new and improved IR over the next two to four years that:

- makes it easier for other government agencies, stakeholders, and the public to educate themselves about our Clean Water Act programs and the quality of the State's waters,
- makes it easier for WDEQ to access the data for planning, reporting, and analysis purposes,
- and makes it easier for WDEQ to provide quality control and assurance of the 305(b) and 303(d) tables (using a single database, instead of individual tables in Word)

The vision for the future IR includes a summary report, supported by electronically accessible technical appendices, an online integrated list with links to the assessment records, and an interactive web-based online map.

B. TASKS

The following tasks have been identified to support the above goals. It is expected that the contractor shall work closely with the EPA WACOR and CO, and with Wyoming DEQ to complete these tasks.

Task 1 – Quality Assurance

Quality Assurance (QA) is an important component of EPA's work to assure that minimum quality standards are attained. The Contractor shall follow the Quality Management Plan (QMP) for this contract. In addition, the contractor shall document the processes for quality assurance that it shall follow for the tasks under this Work Assignment (WA) in a brief Quality Statement (QS). The QS shall include any Standard Operating Procedures that are relevant to the tasks in the WA.

Deliverables: Quality statement

Task 2 – Scoping Conference Call

The Contractor shall schedule a scoping meeting with the EPA WACOR within 15 business days following receipt of this PWS to discuss the overall objective of the PWS and specific task elements.

Deliverables: Meeting minutes from the scoping conference call.

Task 3 – Progress Reports

The contractor shall prepare Monthly Progress Reports containing a description of the work performed that month, specific difficulties encountered, hours expended and percentage of each task completed with accompanying invoices based on work performed; electronic copies, with bookmarks, to the WACOR and CO.

Deliverables: Monthly progress reports for the life of the project.

Task 4 – GIS Support

The objective of this task is to ensure that the current shape files from the 2018 Integrated Report are accurate and adequately attributed to facilitate future mapping, spatial analysis, and updates for subsequent IR's by WDEQ. Additionally, it is envisioned that this task will provide a foundation for the ultimate creation of a web-based interactive map.

Task 4a. Assessment Unit Shape File Assessment

EPA will provide the contractor with GIS shape files representing the assessment units from Wyoming's 2018 Integrated Report. The contractor shall assess the shape files and work closely with EPA and WDEQ

to identify and correct errors, and to process the shapefiles so that they are more user friendly (e.g., dissolve stream segments into single threads for each assessment unit), as needed.

Deliverables: Draft and final GIS shape files

Task 4b. Shape File Attribution

Using data from Wyoming's ATTAINS provided by EPA, the contractor shall attribute the shape files to facilitate the display of spatial information for all assessed lakes and streams in Wyoming. The following attributes (at a minimum) shall be included:

- Integrated Report Category
- Cause of impairment (i.e., referred to as "parameters" in ATTAINS)
- Impaired uses (ideally linked to the causes of impairment)
- Assessed uses

Deliverables: Draft and final GIS shape files

Task 5 – 305(b) and 303(d) Lists Support

The ATTAINS Design Team has decided not to create standard reports for 305(b) and/or 303(d) lists (in other words, it is not possible to export or download the "303(d) list" from ATTAINS). As a result, states will be required to create their own reports. The contractor shall examine report formats used nationally by the states, provide a number of examples, and work with WDEQ to develop standard report templates to be created with information readily exportable from ATTAINS.

Deliverables:

- Phone call with presentation of findings
- Draft and final template for Wyoming 305(b) and 303(d) lists

Task 6 – Use Support Determination Records

WDEQ's current Integrated 305(b)/303(d) Report (IR) includes listings based on use support determinations dating back to the 1990s. The format used for documenting these use support determinations has varied widely and documentation is not currently housed in a common location. For example, some of the earlier listings are based on third-party reports and the only documentation is that which is provided in the narrative of the IR. In more recent cases, use support determinations have been documented in lengthy reports prepared by WDEQ's Monitoring Section.

The objectives of the task are to: 1) compile all of the assessment records for storage in a common location ; 2) create a Use Support Determination Summary Sheet (USDSS) to succinctly document the rationale for previous and future WDEQ use support determinations; 3) populate the USDSSs; 4) link the USDSSs to ATTAINS, and 5) link the USDSSs to GIS.

Task 6a – Create a Use Support Determination Summary Sheet

The intent of the USDSS is to succinctly summarize listing information, document the basis for the use support determination, and to identify and link to supporting documents. It is envisioned that the USDSS will include the following types of information and will be presented in a standardized one to two-page format:

Listing Information

- Assessment Unit ID
- Location Description
- Water Type
- Cycle Last Assessed
- Assessment Unit IR Category
- Designated Uses Assessment Status
- Causes of Impairment

Use Support Determination

- Listing History
- Use Support Determination Rationale (one to two paragraphs)
- Links to supporting documents

The contractor shall summarize approaches used nationally by the States to document use support determinations and use the results to work with WDEQ and EPA to develop a standard format/template for formally documenting previous and future Wyoming use support decisions.

Deliverables:

- Phone call and presentation of findings
- Draft and final USDSS template

Task 6b – Populate the Use Support Determination Summary Sheets

The purpose of this task is to populate the USDSSs developed in Task 6b. The "Listing Information" is currently available in ATTAINS. Tetra Tech shall develop a tool to use data exported from ATTAINS to auto-populate the "Listing Information" into the USDSSs for each assessment unit.

Deliverables: Populated USDSSs for each Wyoming assessment unit

Task 7 – Create Geodatabase

The contractor shall create a geodatabase that links the 303(d)/305(b) GIS layers with the Wyoming USDSSs. The geodatabase shall be made available online (internal to EPA and Wyoming only) with the produced information. The contractor shall research how other state agencies utilize this technology and shall use that information to build the Wyoming geodatabase. Findings shall be shared with Wyoming and EPA staff.

Deliverables: (1) Phone call and presentation of findings (2) Draft and final geodatabase (3) webinar for EPA and Wyoming DEQ to demonstrate use of the geodatabase.

C. SCHEDULE OF BENCHMARKS & DELIVERABLES:

Task #	BENCHMARK, DELIVERABLE or MILESTONE	SCHEDULE
1.0	Quality statement	Within ten days of WA award.
2.0	Kick-off meeting	Within ten days of WA award.
3.0	Progress reports	Monthly for life of the WA
4.0	GIS Support	Award to June 30, 2019
5.0	305(b) and 303(d) Lists Support	Award to June 30, 2019
6.0	Use Support Determination Records	Award to June 30, 2019
7.0	Create Geodatabase	Award to June 30, 2019

D. REPORTING

The Contractor shall participate in status phone calls with the WACOR on an as-needed basis. The WACOR shall provide the Contractor with a one-week notice of any scheduled status calls. All documentation and reporting under this WA shall be in compliance with contract requirements. See contract clause F.2, F.3, and J.2 "List of Attachments, Number 2 - Reports of Work".

The Contractor shall prepare and furnish each month to the WACOR a written summary of work performed, and progress towards the schedule of benchmarks, deliverables and milestones which has been accomplished each month. The Contractor shall also include in this item a brief written summary of any challenges encountered in the appropriate month.

In addition, the Contractor shall identify and briefly describe in the written monthly report those QA / QC activities which were performed to support implementation of this WA, and furnish a brief written description of: problems encountered, and any deviations were occurred from: the QMP, any QAS, any SOP's, checklists, or other QA guidance, as well as a description of the corrective actions taken.

E. CONTRACTOR IDENTIFICATION

Contractor personnel shall always identify themselves as Contractor employees by name and organization and physically display that information through an identification badge. Contractor personnel are prohibited from acting as the Agency's official representative.

The Contractor shall refer any questions relating to the interpretation of EPA policy, guidance, or regulation to the WACOR.

F. CONFERENCE/MEETING GUIDELINES AND LIMITATIONS

The Contractor shall immediately notify the EPA Contracting Officer and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur $20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation shall be included, but the federal employee time for conference preparation shall not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the Contracting Officer.

G. VALIDATION OF WORK ASSIGNMENT DELIVERABLES FOR SECTION 508 COMPLIANCE

The Contractor shall support the WACOR in conducting a "Final Deliverable Validation" to ensure compliance with Section 508 and the Federal Acquisition Regulations (FAR) related to "electronic and information technology (EIT) deliverables." The Contractor shall furnish certification, in writing, to the WACOR that the Contractor has complied with EPAAR Clause 1552.211-79 "Compliance with EPA Policies for Information Resources Management" (Reference Contract Clause C-1), including the requirement that all electronic and information technology (EIT) deliverables be Section 508 compliant in accordance with the policies referenced at http://www.epa.gov/accessibility/. (Reference Contract Clause – 1 (c) and Attachment 1, PWS, Section 2.5.3.4, 3.7, and 4.3.7).

H. QUALITY ASSURANCE SURVEILLANCE PLAN

Per contract requirements.

I. NOTIFICATION OF COMPLETION OF WORK ASSIGNMENT DELIVERABLES

In the event the WA reaches thirty (30) days prior to the end of the Period of Performance in a given period, and the Contractor assesses that the Contractor shall not be able to satisfactorily complete any of the benchmarks, milestones, or deliverables by the end of the Performance Period, the Contractor shall notify the WACOR and the Contracting Officer (CO) immediately, in writing. Within five (5) business days of said notification, the WACOR, in coordination with the CO, will provide technical direction concerning use of the remaining funding to prepare and furnish to the TOPO: draft deliverables, interim work products, and any necessary working files in an electronic format which is supported by EPA.